

NGC-40 DEMO UNIT

USER MANUAL



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SECTION - 1 STANDARD SETUP USING RS-232 COMMUNICATIONS

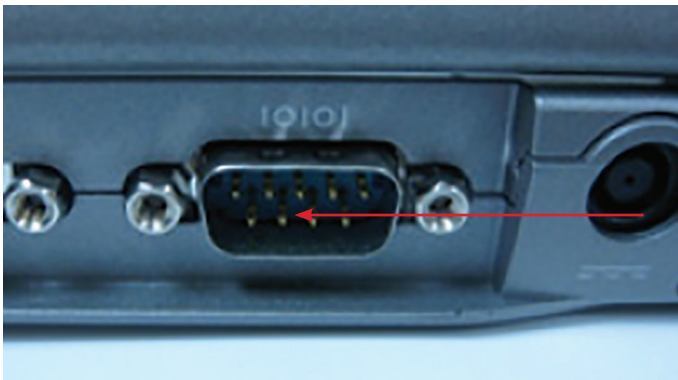
1.1 Introduction

For demonstrating the nVent RAYCHEM NGC-40 capabilities, the NGC-40 demo unit requires to communicate with TOUCH 1500 software running on a TOUCH 1500 touch screen display or on your pc or laptop.

The NGC-40 demo uses the RS-232 port from the NGC-40-BRIDGE module to communicate with TOUCH 1500 software. The NGC-40 demo ships from the factory with one RJ-11 to 9 pin D-Sub female cable and one USB to RS-232 serial cable. There are two methods for interfacing the NGC-40 demo to a computer.

Method 1: Computer has RS-232 port

If your computer has a 9 pin D-Sub male connector, then you can connect directly to the PC using the RJ-11 to 9 pin D-Sub female cable.



RS-232 port



RJ-11 to 9 pin D-Sub female cable used to connect the NGC-40 to your computer

Method 2: Computer does not have a RS-232 port

Most computers today do not have an RS-232 port, therefore you must use a USB port.

If using the USB to RS-232 cable supplied with the demo, you must first install the necessary drivers to your computer. Included in the packaging of the USB cable is a disk with the drivers. Follow the directions on the disk to load the USB drivers (May need admin rights from IT).

The figures below show the two cables.



RJ-11 to 9 pin D-Sub female cable

USB to RS-232 serial cable.



RJ-11 to 9 pin D-Sub female cable mating with the USB to RS-232 serial cable

You must follow the instructions in Section 1.3 to determine the USB COMM port numbers.

1.2 NGC-40 Demo Power Entry

The NGC-40 demo can be powered either by 120 Vac or 230 Vac. On the side of the demo is the power entry connection. The demos are configured at the factory for either 120 Vac in or 230 Vac input prior to shipping. Always refer to yellow label next to the ON/OFF switch for the proper voltage.

120 Vac Demo Unit



ON/OFF Circuit
Breaker Switch
and power entry.

AC Power cord
for voltages
100-120 Vac

230 Vac Demo Unit

The illustration below shows the 230 Vac demo. Typically the demos that are configured for 230 Vac input will be used in countries other than North America. Notice that the AC plug has been removed. Since this version of the demo can be used in many different countries it is up to the personnel in that country to install the proper AC plug.



AC Plug removed at the
factory prior to shipping.

1.3 How to determine the USB COMM Port Number

During the installation of the driver software for the USB to RS-232 converter, A COMM port number will be assigned. This COMM port number should be selected in the TOUCH 1500 software when using the USB to RS-232 convert. See 3.2 Selecting and Configuring the TOUCH 1500 COMM Port.

The following steps will help you determine which COMM port has been assign to the USB to RS-232 converter.

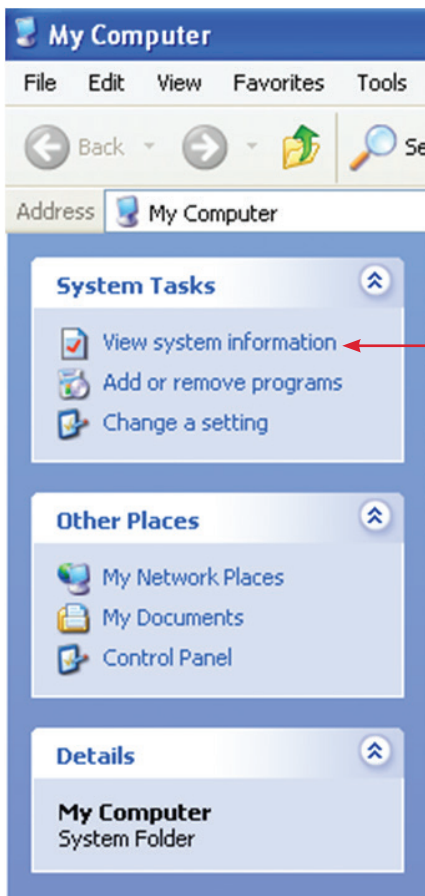
Step 1 – Insert the USB end of the USB to RS-232 cable to any available port on your PC, leave the other end of the cable open.



USB port from
computer

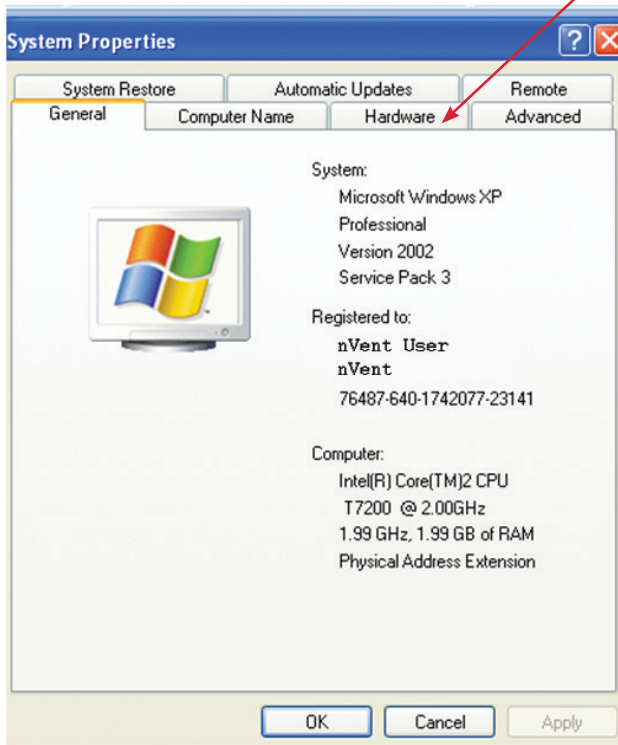
Step 2 – On the task bar from your PC select the **START** button (lower left hand corner) then select **MY COMPUTER**.

Step 3 – From the **System Tasks** menu select **View System Information** as shown.

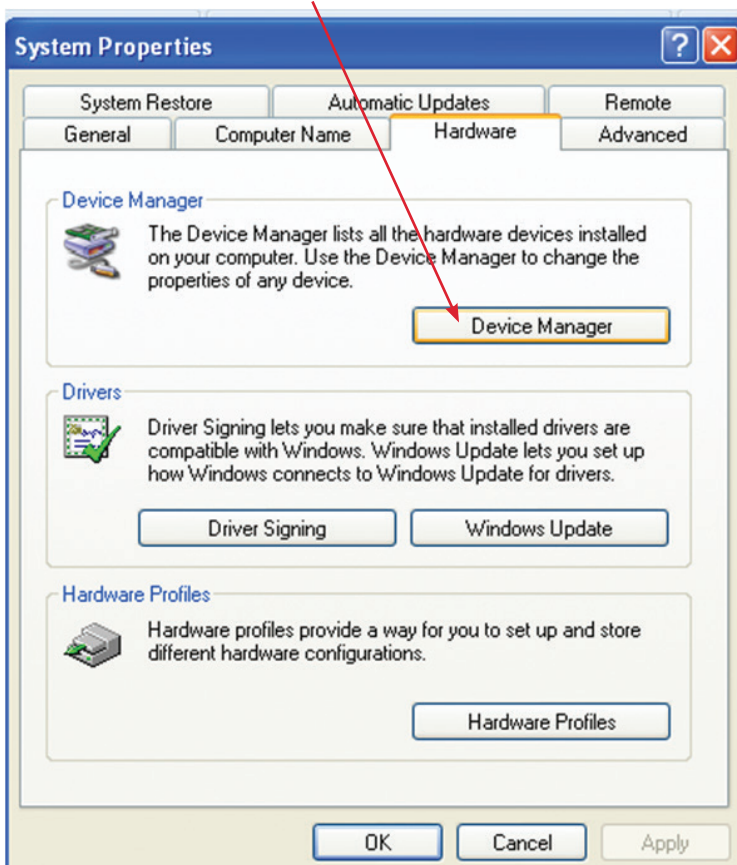


Click on VIEW SYSTEM
INFORMATION

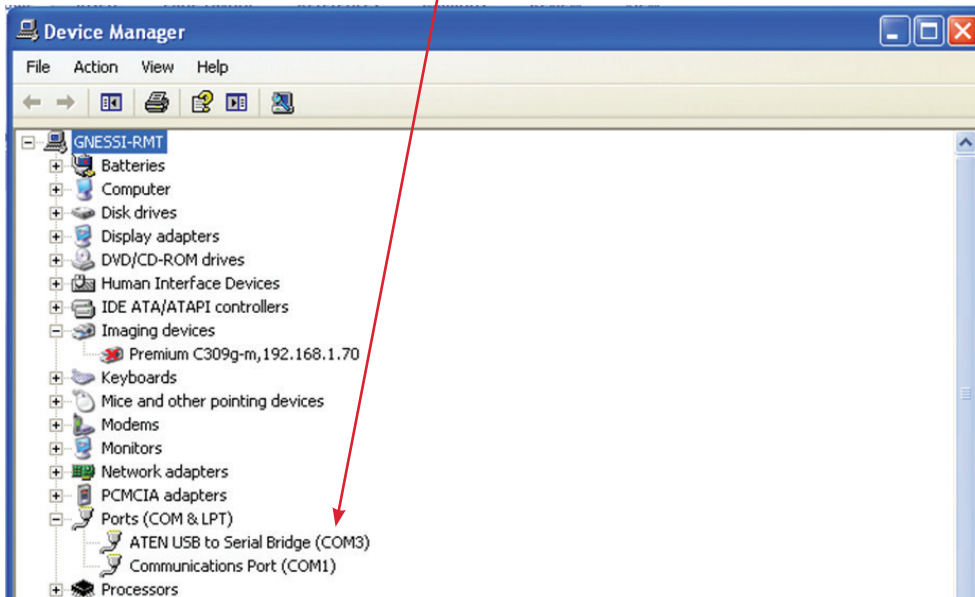
Step 4 – The following screen will appear. Click on the **Hardware** tab.



Step 5 – Click on the **Device Manager** tab.



Step 6 – Select Ports (COM & LPT). You will now see the COMM port that your PC has selected for the USB cable. In this example COM 3 has been selected.



Step 7 – You will need to enter this com port into the TOUCH 1500 software.

Step 8 – Record the COM port number_____ for future reference.

SECTION - 2 NAVIGATING THE MENUS

2.1 Introduction

The first screen that appears once you start the program is shown below. From this screen you can access the **Circuit List** and **Alarm List**. The screen below is the **Circuit List**. This list will only show the NGC-40-HTC and NGC-40-HTC3 modules and some circuit status information.

2.2 Navigation Buttons

The RAYCHEM TOUCH 1500 software Main screen has several functional areas. The screen below is the **Circuit List**

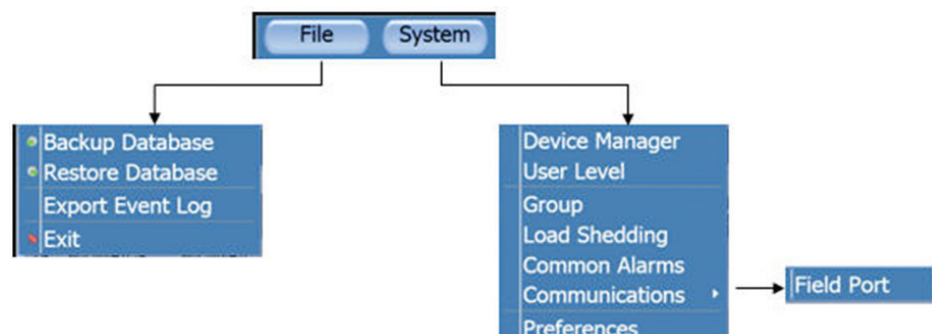
The screenshot shows the 'Circuit List' screen of the RAYCHEM TOUCH 1500 software. The interface includes a top menu bar with 'File' and 'System' buttons. Below this is a sub-menu bar with 'Circuit List', 'Alarm List', and 'Device Manager'. A 'Filter by group:' dropdown menu is set to '[None]'. The main area displays a table with the following data:

Status	Address	Tag	Device Type	Setpoint Temperature	Actual Temperature	Line Current	G.F. Current	Heater Status
OK	102469	NGC40-HTC-102469	NGC-40-HTC	10°C	78°C	8.1A	16mA	On
OK	002769	NGC40-HTC-2769	NGC-40-HTC	10°C	78°C	4A	0mA	On
OK	001BA6	NGC40-HTC3-1BA6	NGC-40-HTC3	10°C	80°C	6.8A	16mA	On

Callouts on the left side of the screen identify the following elements:

- Main Pull Down Menus (points to the File and System buttons)
- Circuit Staus List (points to the Circuit List tab)
- Circuit View List Filter (points to the Filter by group dropdown)
- Circuit List View of HTC and HTC3 Modules (points to the table)
- Software Version (points to v1.0.34)
- Communication Status (points to Ready)
- Current Date and Time (points to Friday, September 10, 2010 9:26:40 AM)

Below is a Menu Map of the **FILE** and **SYSTEM** buttons shown at the top of the screen. The information you learn in this section will help you navigate through the menus and become more proficient in configuring and monitoring circuits.



Functional Screen Area

File

Backup Database
Restore Database
Export Event Log
Exit

System

Device Manager

User Level

Group

Load Shedding

Communications

Preferences

Functionality

Allows the User to backup the database onto a memory stick

Allows the User to enter the backup database via a memory stick into the TOUCH 1500 program.

Allows the User to export the Event Log onto a memory stick

Exit the program to Windows Desktop

Allows the User to load or remove the modules, (HTC, HTC3 and I//O modules) from the database, configure each module, and set the modules online or offline.

Allows the User to set the password for each of the four security levels

Allows the User to assign a name to a group of circuits that can be used in the “Filter by Group” in the Circuit List.

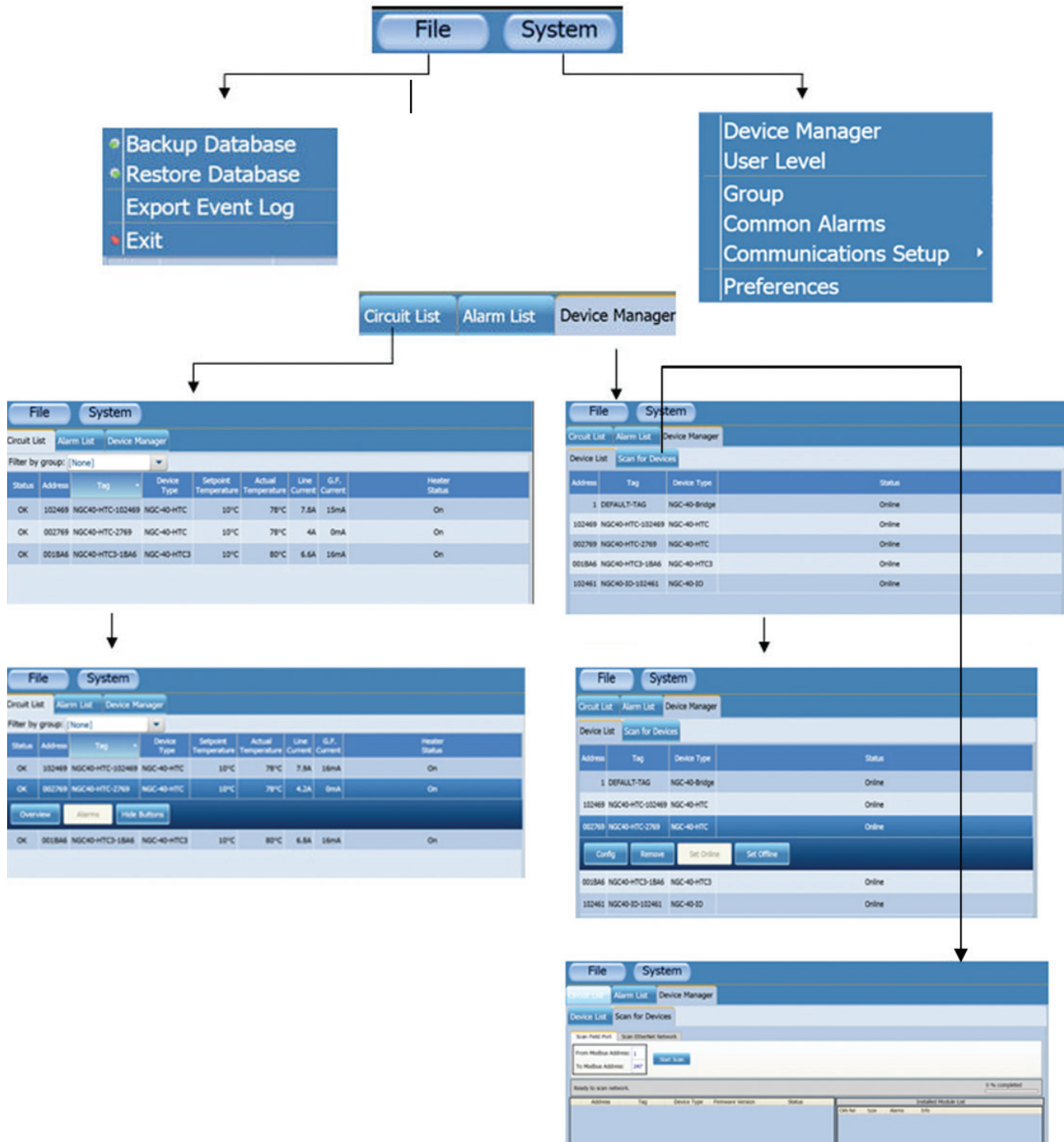
Allows the User to set up the load shedding module (ADAM Relay module) for Load Shedding.

Allows the user to set up the Field Communication ports: Com1 (RS-232) or Com 3 (RS-485) from the TOUCH 1500 to the NGC-40-BRIDGE Module.

Allows the User to select language, units (°F or °C), number of minutes before reset to the default security level and bring you back to the Circuit List screen and update time/date.

2.3 Menu Maps

The following menu structure shows you menus used whether you select Circuit List or Device Manager:



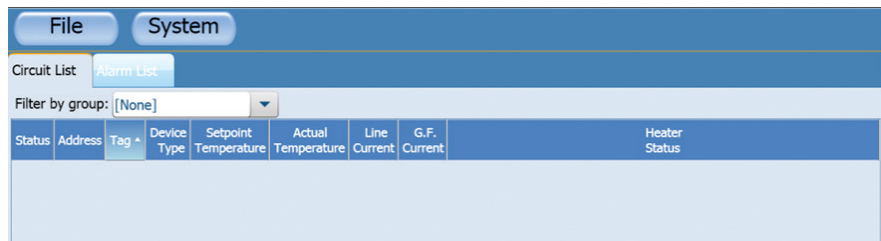
SECTION – 3 LOADING NGC-40 MODULES USING TOUCH 1500 SOFTWARE

3.1 Introduction

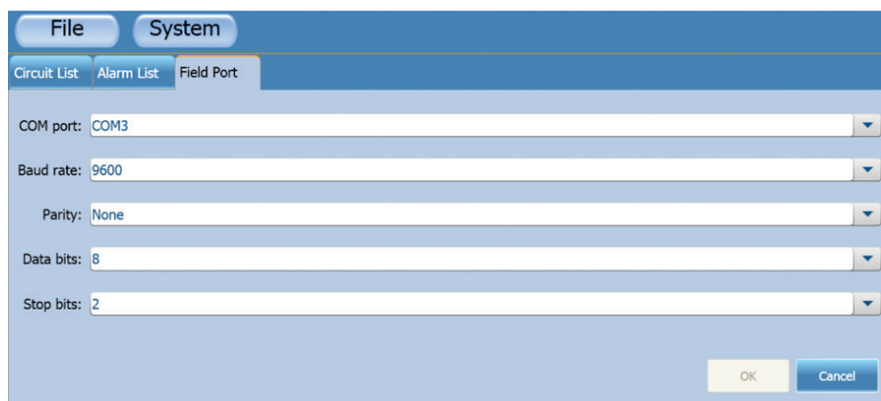
You must have the TOUCH 1500 software and Microsoft SQL Server Compact 3.5 Service Pack 2 installed on your PC before continuing with this section. You may need Admin rights to install this program.

3.2 Selecting and Configuring the TOUCH 1500 COMM Port

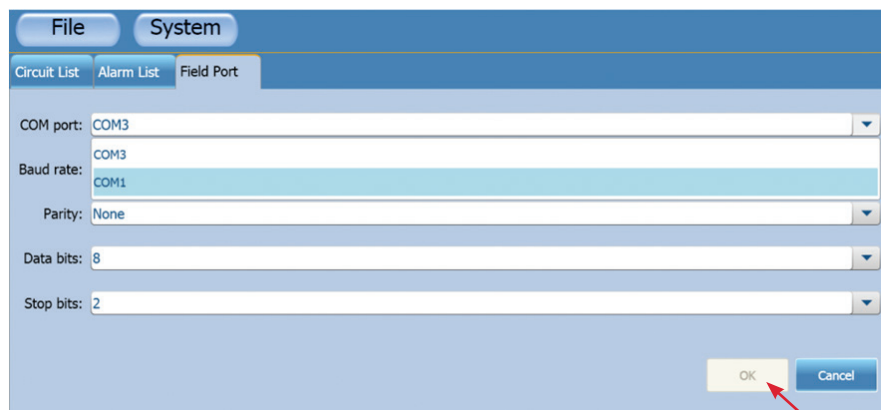
Step 1 – Start the TOUCH 1500 software. You should see the following screen:



Step 2 – Go to the System | Communication | Field Port window. The below screen will appear:



Step 3 – Click on the DOWN ARROW for the COM Port field to expose the COM PORTS. You must choose COMM 1, as this document describes it, or COM 1 as the software describes it, if using the RS-232 port on the PC. If using a PC there may even be a COM (COMM) 2 for RS-232. Or, if using the USB to RS-232 cable one must choose the COM (COMM) port found in section 1.3.

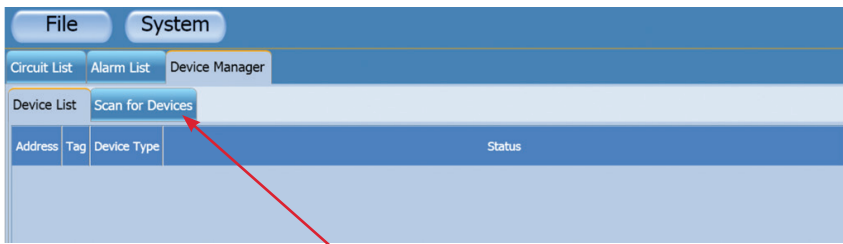


Step 4 – There are no other parameters that need to be changed. Click on the OK button to enter the COM PORT.

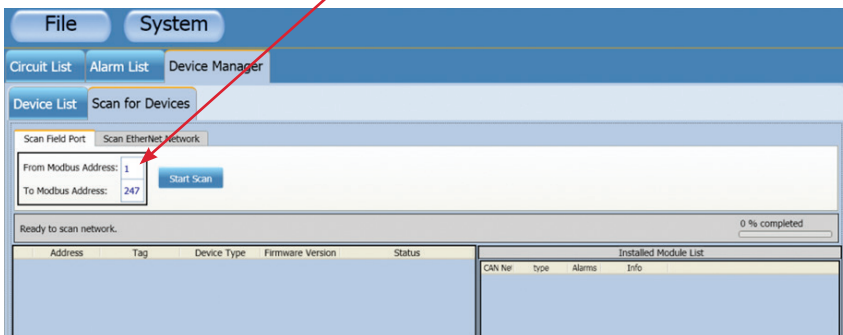
3.3 Scanning NGC-40 Modules

Step 1 – Click on the SYSTEM | DEVICE MANAGER tab

Step 2 – The screen below will appear:

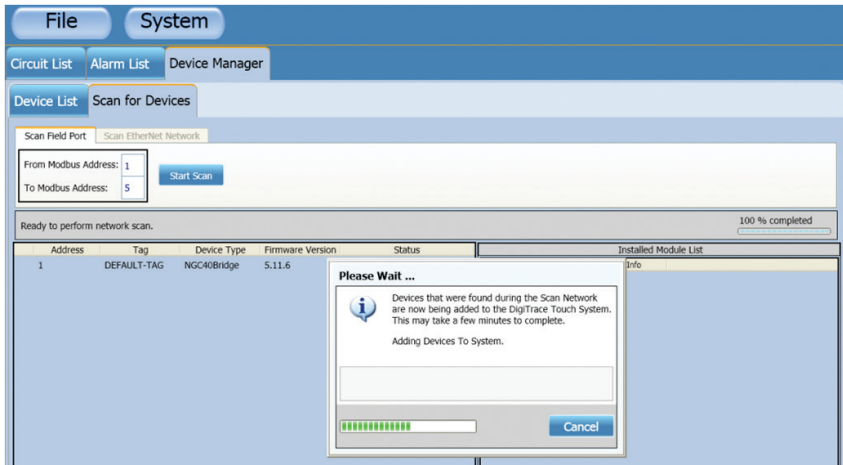


Step 3 – Click on the **SCAN for DEVICES** tab. The screen below will appear. The NGC-40-BRIDGE module has been set to Modbus address 1 at the factory. Change the 'To Modbus Address' from 247 to 2 by clicking on the box with 247 shown.

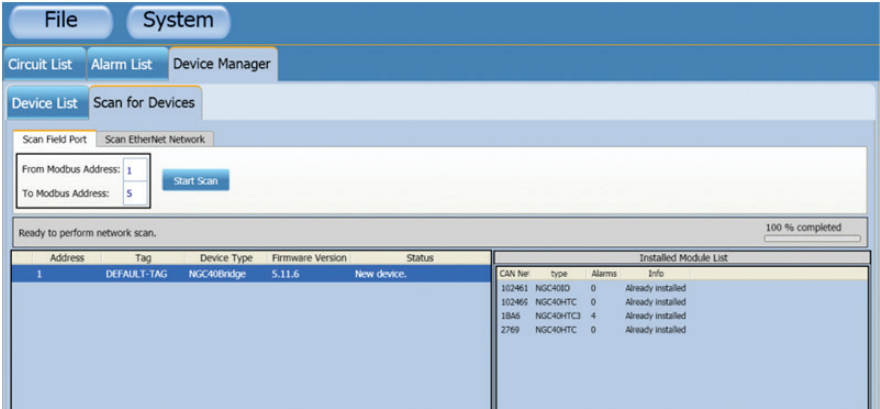


A numeric keypad will appear that will allow you to enter a new Modbus address number.

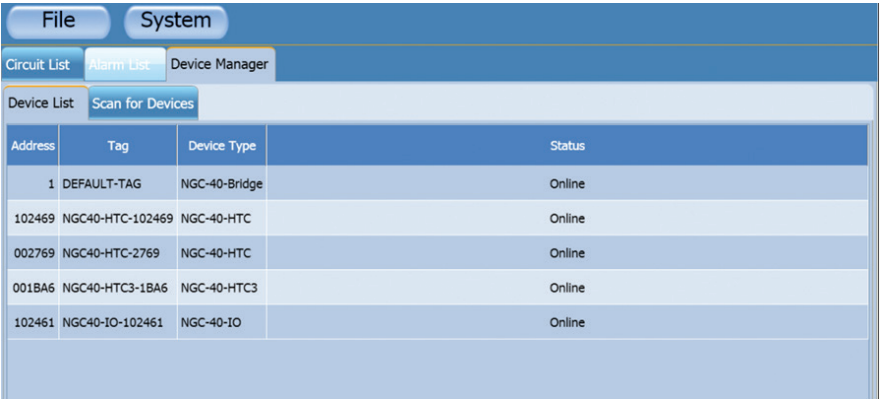
Step 4 – Click on the Start Scan button. The following screen will appear showing that TOUCH 1500 software is now scanning the modules in the NGC-40 DEMO. At the end of the SCAN click on the OK button to add modules.



Step 5 – At the end of the scan, the TOUCH 1500 software will display the modules that are connected to the NGC-40-BRIDGE. The information shown on the right hand side is the CANbus ID's, type of module, alarms and the modules that have been installed. Information regarding the NGC-40-BRIDGE is shown on the left hand side.



Step 6 – Click on the "Device List" tab. The screen below will appear. This screen shows all the modules that were scanned along with their tag name.



IMPORTANT: You only need to do this one time unless you change COMM ports on your PC or you add additional modules.

Step 7 – Exit the program by clicking on the FILE button in the upper left hand corner.

SECTION – 4 NGC-40-BRIDGE MODULE CONFIGURATION

4.1 Introduction

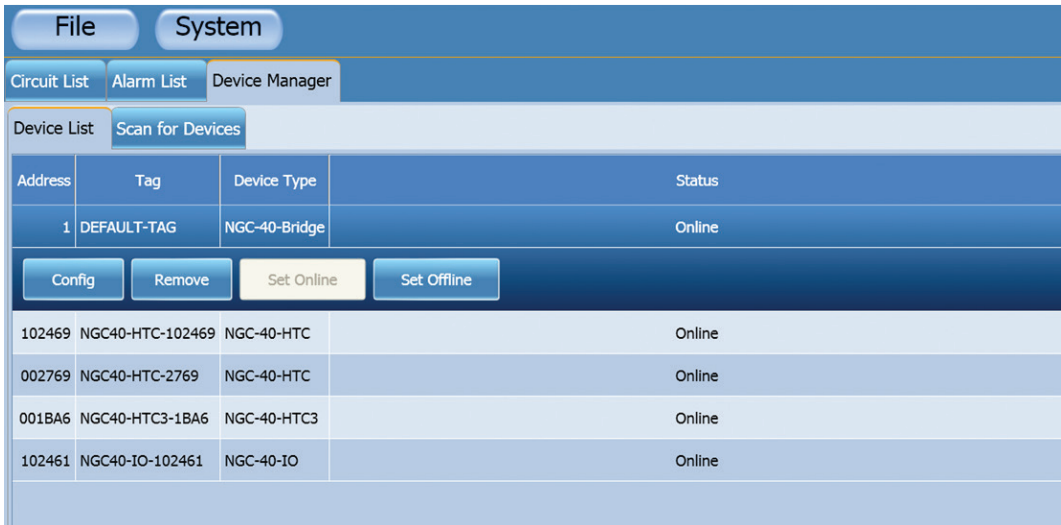
Before you proceed with this section you must first complete Sections 2 and 3. There are only two parameters that you can configure for the NGC-40-BRIDGE module using the TOUCH 1500 software. They are:

Tag – this parameter will allow you to give the NGC-40-BRIDGE a specific name that would relate to the product line that the module is used.

Device Reset Alarm – the default for this parameter is enabled. When enabled, the NGC-40-Bridge will send an alarm when it has been reset from a power cycle or it's reset button has been pressed.

4.2 Configuring the NGC-40-BRIDGE Module

Step 1 – Go to the Device List screen and select the NGC-40-BRIDGE module by clicking anywhere on the Bridge line. The screen below will appear:



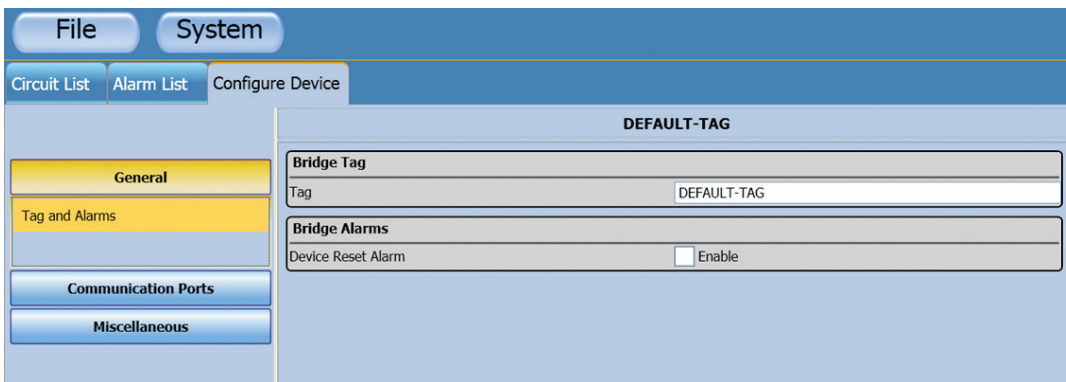
Address	Tag	Device Type	Status
1	DEFAULT-TAG	NGC-40-Bridge	Online

Buttons: Config, Remove, Set Online, Set Offline

Address	Tag	Device Type	Status
102469	NGC40-HTC-102469	NGC-40-HTC	Online
002769	NGC40-HTC-2769	NGC-40-HTC	Online
001BA6	NGC40-HTC3-1BA6	NGC-40-HTC3	Online
102461	NGC40-IO-102461	NGC-40-IO	Online

The modules shown in the list above are the modules that were detected during the network scan. If your NGC-40-DEMO has a SLIM (European product only), then it would also appear in this screen.

Step 2 – Click on the Config button. The following screen should be shown:



File System

Circuit List Alarm List **Configure Device**

DEFAULT-TAG

Bridge Tag

Tag: DEFAULT-TAG

Bridge Alarms

Device Reset Alarm: ☒ Enable

General

Tag and Alarms

Communication Ports

Miscellaneous

Step 3 – Change the default tag name.

Under the Bridge Tag heading, click anywhere within the white area and the keyboard will appear. Use the keyboard to change the tag name. Once you enter the name click on the OK button.



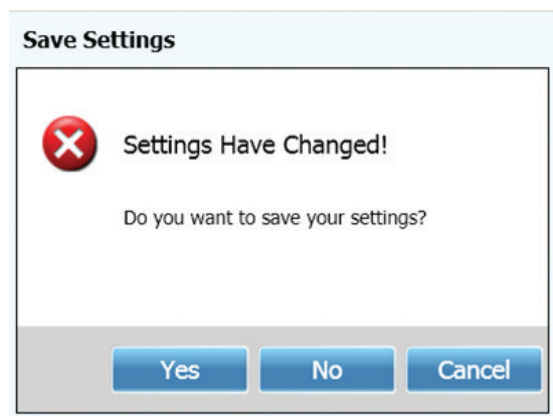
IMPORTANT: you can use your keyboard from your computer.

Step 4 – Enable the Device Reset Alarm.

Check the Enable box under the **Bridge Alarm** heading.

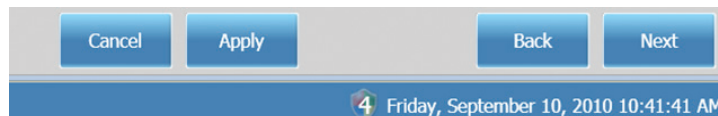
Step 5 – Saving your changes.

Now that you have made several changes to the Bridge you need to click on the Apply button before exiting this screen. If you do not click on the Apply button and you exit this screen, a message will appear and ask if you want to save the changes.



Step 6 – Next and Back buttons

The Next button will sequence through the communication and miscellaneous menus. The Back button will allow you to go back one menu. These two buttons will be shown on all menus when configuring NGC-40-IO, HTC, HTC3 and NGC-40-SLIM modules.



Step 7 – Navigate back to the Device List menu and confirm that the new tag name is shown

5.1 Introduction

The NGC-40-HTC Module provides one temperature sensor input, one multi-purpose dry-contact input, one form-C alarm output relay, contactor relay output and one SSR output. These inputs and outputs may be used in combination with other NGC-40 modules to provide flexible measurement, control, and alarming configurations. This section will discuss both NGC-40-HTC and NGC-40-HTC3. Configure and monitor screens are the same with the exception of the line current measurements. This will be illustrated during the configuration and monitoring of the electrical parameters.

This section will instruct you how to:

- Configure the module as a stand alone device for controlling and monitoring temperatures.
- How to setup for HI and LO temperature alarm conditions.
- How to setup the electrical measurements used to monitor the line current and ground fault current.
- How to monitor the NGC-40-HTC/HTC3 module.

NGC-40-HTC/HTC3 Module



NGC-40-HTC



NGC-40-HTC3




The pictures above show the front of the NGC-40-HTC module. Both the NGC-40-HTC and NGC-40-HTC3 use the same user interface and LED indicators. The face of the module has three push button switches. These switches will allow you to test the ground fault, reset alarms and perform a heater test by turning ON the output briefly. The LED indicators are also useful for determining the status of the module such as alarm conditions when they occur. The difference between NGC-40-HTC and NGC-40-HTC3 are the number of current transformers used to monitor line current. The NGC-40-HTC is single phase and the NGC-40-HTC3 is three phase.

5.2 Basic Configuration

In this section of the manual, the steps for configuring one heat-tracing circuit are presented. Please follow the configuration steps of this circuit, as an example to get acquainted with the NGC-40 configuration.

Step 1 – Start the TOUCH 1500 software. The first screen that appears upon starting the program is the Circuit List.

 **IMPORTANT:** The NGC-40 DEMO has two NGC-40-HTC's and one NGC-40-HTC3 module. This Section will focus on the NGC-40-HTC module for both configuring and monitoring.

File

System

Circuit List

Alarm List

Configure Device

Filter by group:

[None]

Status	Address	Tag	Device Type	Setpoint Temperature	Actual Temperature	Line Current	G.F. Current	Heater Status
OK	102469	NGC40-HTC-102469	NGC-40-HTC	10°C	78°C	7.4A	15mA	On
OK	002769	NGC40-HTC-2769	NGC-40-HTC	10°C	78°C	3.9A	0mA	On
OK	001BA6	NGC40-HTC3-1BA6	NGC-40-HTC3	10°C	80°C	6.4A	15mA	On

Step 2 – Selecting a module from the Circuit List

Select one of the NGC-40-HTC modules shown in the list above. Clicking on one of the NGC-40-HTC's shown in the **Circuit List** will drop down the buttons for **Overview, Alarms and Hide**.

File

System

Circuit List

Alarm List

Configure Device

Filter by group:

[None]

Status	Address	Tag	Device Type	Setpoint Temperature	Actual Temperature	Line Current	G.F. Current	Heater Status
OK	102469	NGC40-HTC-102469	NGC-40-HTC	10°C	78°C	7.5A	15mA	On

Overview

Alarms

Hide Buttons

OK	002769	NGC40-HTC-2769	NGC-40-HTC	10°C	78°C	3.8A	0mA	On
OK	001BA6	NGC40-HTC3-1BA6	NGC-40-HTC3	10°C	80°C	6.5A	14mA	On

Step 3 – Overview

Click on the Overview Button, the following screen will appear. The overview screen shows the status of the NGC-40-HTC controller.

File

System

Circuit List

Alarm List

Circuit Overview

CAN Network ID: 102469
Device Type: NGC40HTC

Version: 3.6.2
Alarms: 0

NGC40-HTC-102469

Controller Status

Heater Status: On

Test Heater

Control Mode: Always On

Control Status: Normal temperature control

Deadband: n/a °C

Control Temperature

Actual Value: 78 °C

Setpoint: 10 °C

High Alarm: 100 °C

Low Alarm: 5 °C

120

78

15

Ground Fault Current

Actual Value: 15 mA

Trip Setpoint: 30 mA

High Alarm: 20 mA

Highest Measured Value: 26 mA

70

15

0

Line Currents

Actual Value

High Alarm

Low Alarm

Power Consumption

Line Current

7.5 A

30.0 A

1.0 A

950 W

0.0

40.0

HTC3 will show the current for
Line 1, Line 2 and Line 3.

Step 4 – Config Button

Click on the Config button. The screen below will appear. This screen has the Basic Settings for Temperature, Electrical and Device Information. The first screen that appears is Temperature.

The screenshot shows the configuration interface for device NGC40-HTC-102469. On the left, a sidebar has 'Basic Settings' highlighted. The main panel is divided into 'General' and 'Control Temperature' sections. The 'General' section shows 'Tag' as NGC40-HTC-102469 and 'Heater Status' as On. The 'Control Temperature' section contains a table with settings for Control Setpoint, High Alarm, Low Alarm, High Limit Cutout Setpoint, Control Temperature Usage, TS Fail Mode, and TS Fail Mode Percentage.

Name	Alarm	Setpoint	Filter
Control Setpoint		10 °C	
High Alarm	<input checked="" type="checkbox"/> Enable	100 °C	0 S
Low Alarm	<input checked="" type="checkbox"/> Enable	5 °C	0 S
High Limit Cutout Setpoint		700 °C	
Control Temperature Usage		Use Lowest Temperature	
TS Fail Mode		Fail Off	
TS Fail Mode Percentage		50 %	

Step 5 – Temperature -General Settings – Tag Name

This close-up shows the 'General' section of the configuration screen. It includes fields for 'Tag' (containing NGC40-HTC-102469) and 'Heater Status' (set to On).

The General section allows you to enter a new Tag name and configure Control Temperature settings. To enter a tag name click where the tag name is shown. This will open the keyboard for entering the new tag name.


- Enter a new tag name

Step 6 – Temperature – Basic Settings – Control Temperature

This close-up shows the 'Control Temperature' settings table. It lists various parameters including setpoints and alarm thresholds.

Name	Alarm	Setpoint	Filter
Control Setpoint		90 °C	
High Alarm	<input checked="" type="checkbox"/> Enable	110 °C	0 S
Low Alarm	<input checked="" type="checkbox"/> Enable	50 °C	0 S
High Limit Cutout Setpoint		700 °C	
Control Temperature Usage		Use Lowest Temperature	
TS Fail Mode		Fail Off	
TS Fail Mode Percentage		50 %	

- Click on the Control Setpoint field. A numeric keypad will open allowing you to change the setpoint.
- Enter in a new setpoint of 90°C.
- The High Alarm is disabled by default. Enable the high alarm by checking this box.
- Change the High Alarm to 110°C.
- Change the Low Alarm to 50°C.
- Click on the Apply button to save these changes.

 **IMPORTANT:** If you try to exit the Config screen without clicking on the Apply button a warning message will appear asking you if these changes are to be saved.

Step 7 – Basic Settings – Control Modes

Click on the Control Modes button in the Basic Settings menu and the screen below will appear. Click on the down arrow to view Switch Control Modes.

The screenshot shows the 'Control Modes' configuration screen for the NGC40-HTC-102469 device. The left sidebar has 'Basic Settings' selected, with 'Control Modes' highlighted. The main area contains the following settings:

Control Modes	
Output Switch Type	EMR
Switch Control Mode	On/Off EMR
Deadband	3 °C
Proportional Band	2 °C
PASC Min Ambient Temperature	-40 °C
PASC Min Pipe Size	0.5" (13 mm)
PASC Power Adjust	100 %

This screen will allow you to select the Output Switch type either SSR (solid state relay) or EMR (electro mechanical relay), Switch control mode and deadband. The default is EMR with ON/OFF control with a deadband of 3. If you select PASC as your Switch Control Mode then the shaded areas will allow you to change setup parameters.

- Change the deadband from 3 to 2
- For this exercise use the default settings for the Output Switch Type and Switch Control Mode.
- Click on the BACK button to return to the Temperature screen.

Step 8 – Basic Settings – Local RTD (TS1)

Click on the Local RTD (TS1) button in the Basic Settings menu and the screen below will appear.

The screenshot shows the 'Local Temperature Sensor' configuration screen for the NGC40-HTC-102469 device. The left sidebar has 'Basic Settings' selected, with 'Local RTD (TS1)' highlighted. The main area contains the following settings:

Local Temperature Sensor	
RTD Type	3 Wire 100 Ohm Platinum
RTD Lead Resistance	0.0 Ohm
RTD Tag	NGC40-HTC-RTD1-102469
TS1 Usage	Control Only

Name	Alarm	Setpoint	Filter
High Alarm	Enable	100 °C	0 S
Low Alarm	Enable	5 °C	0 S

The local temperature sensor (TS1) is the RTD that is connected directly to the NGC-40-HTC. If the "TS1 Usage" is "Control Only" or "Control with High Limit Cut-Out", the high and low alarm settings in Step 6 are used. If the "TS1 Usage" is "Monitoring Only" or "Monitoring Only with High Limit Cut-Out", then the high and low alarm settings above are activated and will be used instead.

Step 9 – Electrical

Click on the Electrical button in the Basic Settings menu and the screen below will appear:

The screenshot shows the configuration interface for the NGC40-HTC-102469 module. The left sidebar has a 'Basic Settings' section with 'Electrical' highlighted. The main panel displays the following settings:

NGC40-HTC-102469					
Line Current					
Name	Alarm	Setpoint		Filter	
High Alarm	<input type="checkbox"/> Enable	30.0	A	0	S
Low Alarm	<input checked="" type="checkbox"/> Enable	1.0	A	0	S

Ground Fault Current					
Name	Alarm	Setpoint		Filter	
High Alarm	<input checked="" type="checkbox"/> Enable	20	mA	0	S
Ground Fault Trip	<input checked="" type="checkbox"/> Enable	30	mA		

General					
Fixed Voltage		120	V		
Fixed Frequency		60	Hz		

This screen below is the NGC-40-HTC3 Module:

The screenshot shows the configuration interface for the NGC40-HTC3-1BA6 module. The left sidebar has a 'Basic Settings' section with 'Electricals 1' highlighted. The main panel displays the following settings:

NGC40-HTC3-1BA6					
Line Current 1					
Name	Alarm	Setpoint		Filter	
High Alarm	<input type="checkbox"/> Enable	30.0	A	0	S
Low Alarm	<input checked="" type="checkbox"/> Enable	1.0	A	0	S


Line Current 2					
Name	Alarm	Setpoint		Filter	
High Alarm	<input type="checkbox"/> Enable	30.0	A	0	S
Low Alarm	<input checked="" type="checkbox"/> Enable	1.0	A	0	S

Line Current 3					
Name	Alarm	Setpoint		Filter	
High Alarm	<input type="checkbox"/> Enable	30.0	A	0	S
Low Alarm	<input checked="" type="checkbox"/> Enable	1.0	A	0	S

Step 10 – Electrical – High and Low Line Current Alarms

The High Alarm current is disabled by default. To enable the High Alarm, the box next to the alarm must be checked.

- Set the High alarm to 40 amps
- Set the Low Alarm to 2 amps
- Click on the Apply button to save the new setup parameters

 **IMPORTANT:** the filters are set to 5 seconds. The system default is 0. Due to the simulation of the line current for the demo, all line current filters are set to 5 seconds. Do not alter these filters.

Step 11 – Electrical – Ground-Fault Current Alarms

The ground fault trip can be disabled. To disable this Alarm, the box next to the alarm must be unchecked. For NGC-40-HTC3 click on Electrical 2 to view the ground-fault Config screen.

- Set the High Alarm to 30mA
- Set the Ground-Fault Trip to 45mA
- Click on the Apply button to save the new setup parameters

Step 12 – Electrical – General

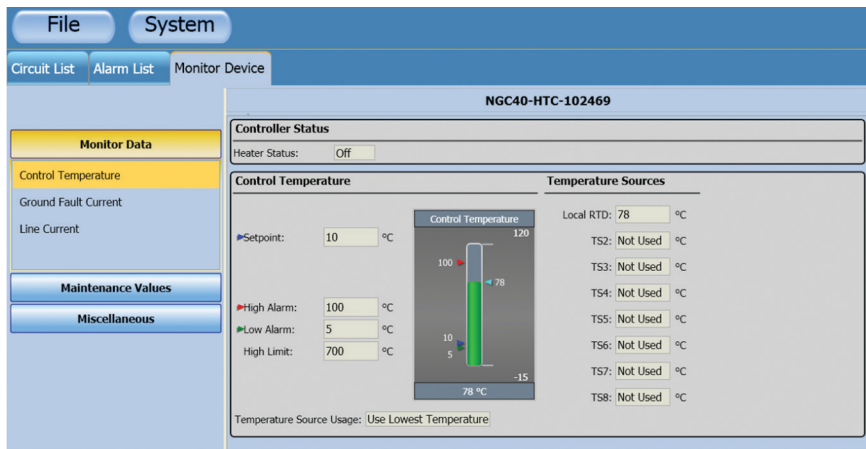
- Enter the heater's supplied voltage

5.3 Monitoring the NGC-40-HTC/HTC3 Module

Step 1 – Monitor – Control Temperature, Ground-Fault Current and Line Current

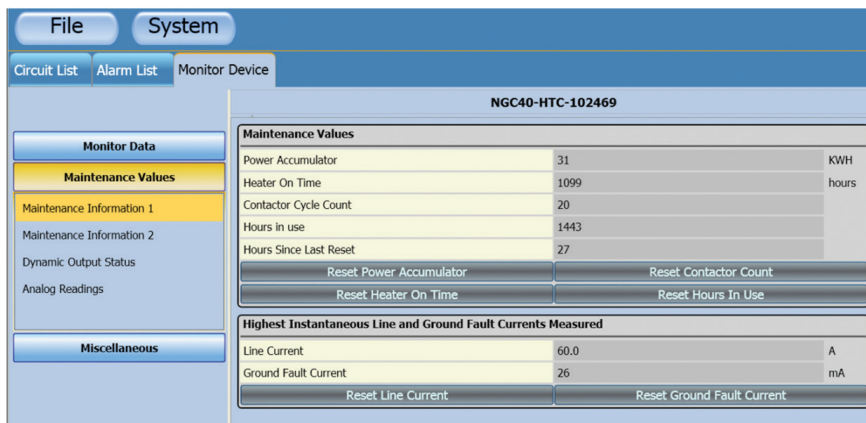
Click on the **Monitor** button located at the bottom of the screen. The following screen will appear.

This screen is called Monitor Device, shown first is the Monitor data for Control Temperature. A similar screen is also provided for ground-fault current and line current. Move the cursor over the gauge to obtain the actual control temperature valve and setpoints.



Step 2 – Monitor – Maintenance Values

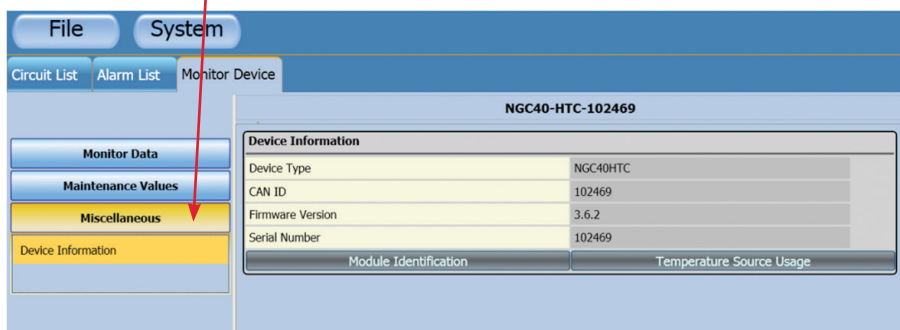
Click on the Maintenance Values button. The screen below should appear.



IMPORTANT: The information available on this screen may be useful to the maintenance personnel. Click on the buttons to view the information available.

Step 3 – Monitor – Miscellaneous

Click on the **Miscellaneous** button. The screen below will appear.



This screen may contain useful information while troubleshooting HTC problems.

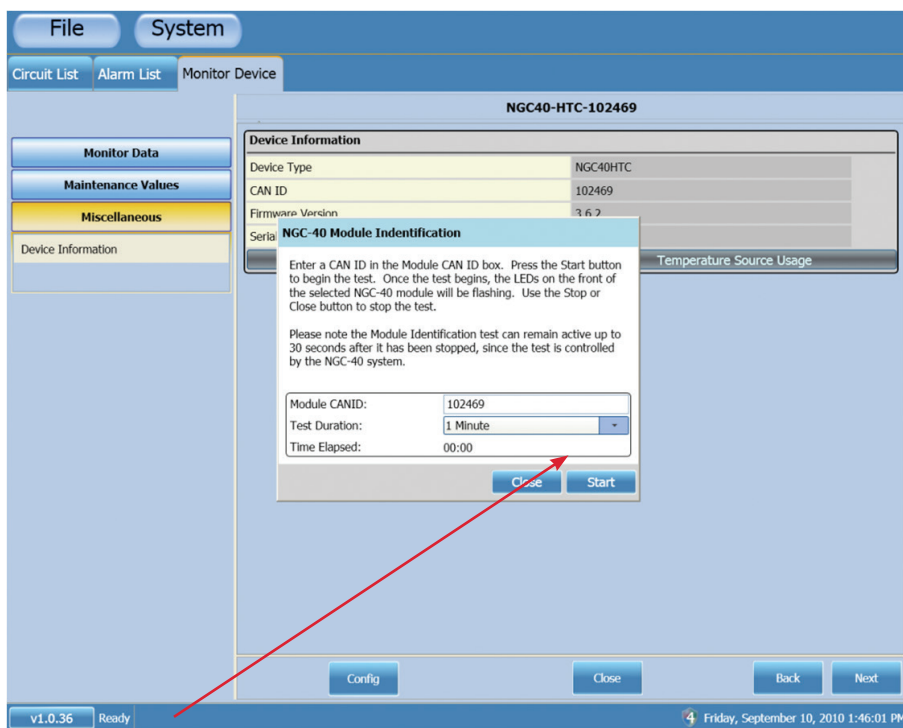
Step 4 – Monitor – Miscellaneous – Module Identification

This feature will be useful when identifying a module within a panel. While still maintaining full control of the heater, all modules connected to the BRIDGE will stop activating their front panel LEDs for a brief period of time, except the module being identified.



IMPORTANT: This feature can be access from any of module screens within the TOUCH 1500 software.

- Click on the **Module Identification** button. The screen below will appear.



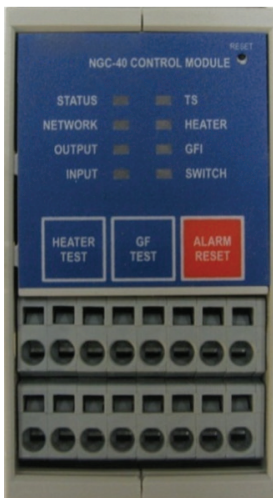
- Click on the **Start** button while observing the modules in the demo panel.
- After one minute the modules will start communicating. Click on the **STOP** button followed by the **CANCEL** button.
- Click on the Monitor Data button to return to the monitor screen.

Step 5 – NGC-40 Demo Simulation panel

- Set the NGC-40 DEMO panel control knobs as shown below.



- If the TOUCH 1500 software displays an "Alarm Ack" window in the upper right corner after you set the control knobs, press the ALARM RESET button located on the HTC.



Step 6 – Creating a High Temperature Alarm

Rotate the **TS1** switch on the NGC-40 Demo to create an HIGH temperature alarm. Notice after a few seconds the "Alarm Ack" message in the upper right corner of the screen.

Step 7 – Acknowledging the Alarm

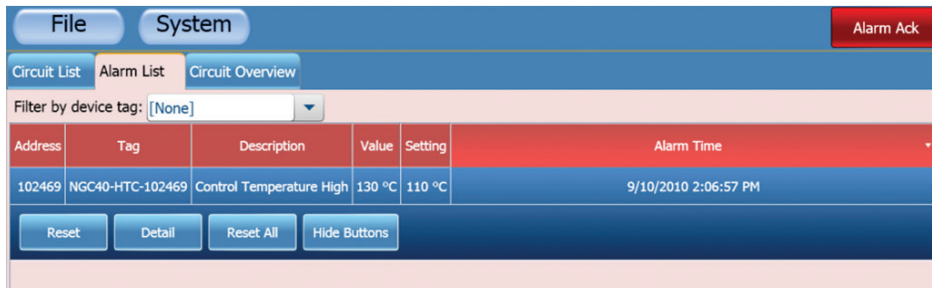
Click on the **Alarm List** tab. You should now see a Control Temperature High alarm. The NGC-40-HTC module should also indicate a TS alarm.

File System Alarm Ack					
Circuit List Alarm List Circuit Overview					
Filter by device tag: [None]					
Address	Tag	Description	Value	Setting	Alarm Time
102469	NGC40-HTC-102469	Control Temperature High	130 °C	110 °C	9/10/2010 2:06:57 PM

Step 8 – Resetting the Control Temperature High Alarm

- Click on the alarm shown in the list.

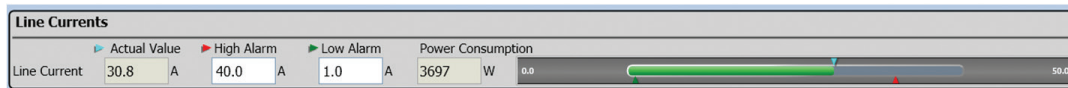
The reset buttons drop down. If you had multiple alarms then you could reset all or you can reset individual alarms. Since we only have one alarm click on the Reset button.



- Rotate TS1 back to 79°.
- Click on the Monitor tab to return to the monitor screen.
- This screen shows the **Overview** for the circuit configured. Notice on the left hand side there are two selections, **Temperature Gauges** and **Electrical Gauges**.
- Select one of the gauges and observe the screens.
- Return back to the **Overview** screen.

Step 9 – High Current Alarm

Rotate the Line Current knob clockwise very slowly on the NGC-40 DEMO while observing the Line Current section within the **Overview** screen. The line current measurement shown on the screen will update very slowly. Keep rotating until the alarm LED on the NGC-40 Demo turns ON.

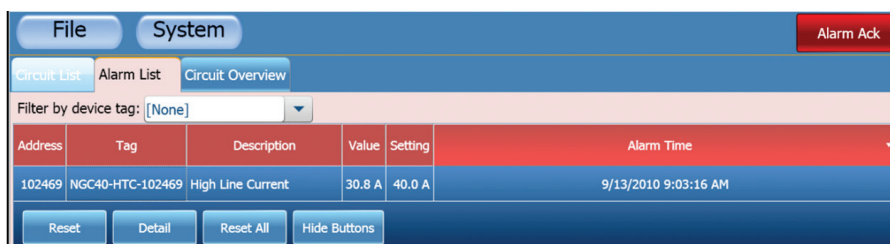


Step 10 – Resetting the High Current Alarm

- Rotate the Line Current knob on the NGC-40 Demo counterclockwise until the current shown in the Overview is below the High Alarm value.
- When the Alarm Ack message appears in the upper right hand corner click on the Alarm List tab.
- Click on the alarm to view the reset buttons.
- Reset the alarm.
- Click on the Monitor Button.

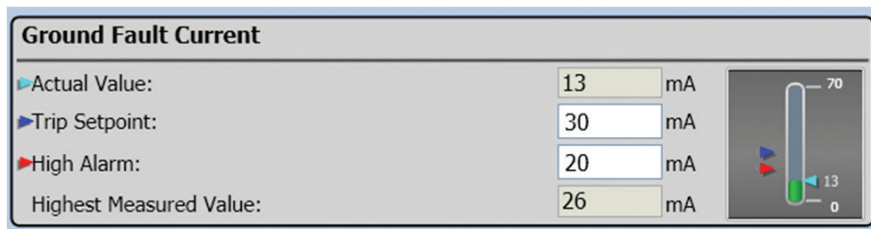
Step 11 – Alarm Reset Button on the NGC-40 Module

Repeat Steps 9 and 10. Use the Alarm Reset button on the NGC-40-HTC module to reset the alarm.



Step 12 – Ground Alarm / Trip

Create a ground fault alarm by rotating the ground fault knob slowly clockwise until the NGC-40-HTC module alarms. The ground-fault alarm will not trip the output OFF. Observe the ground fault current on the **Circuit Overview** screen.



- Continue rotating the ground fault knob until the NGC-40-HTC module trips. This trip current will cause the output to turn OFF.
- Rotate the ground fault knob fully counterclockwise.
- Use the alarm list to reset the alarm.
- Click on the **Monitor Device** Tab.
- Review – What you accomplished
- How to setup a circuit using the basic mode for an NGC-40-HTC module. This includes High and Low temperature alarms, control setpoint, High and Low current alarms and ground fault alarms.
- How to view alarms using the alarm list.
- How to reset an alarm from the alarm list.
- How to reset an alarm from the NGC-40-HTC module.
- How to identify a module using the Module Identification button.

 **IMPORTANT:** Use the steps outlined in this section to configure the second NGC-40-HTC module and NGC-40-HTC3 module.

6.1 Introduction

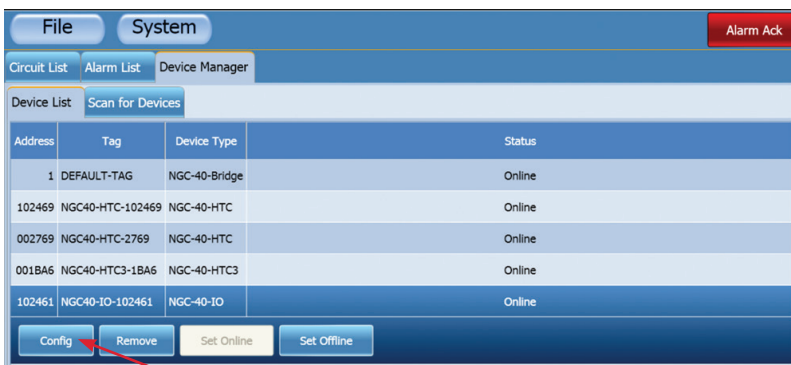
The NGC-40-IO Module provides four temperature sensor inputs, one multi-purpose dry-contact input, and one form-C alarm output relay. These inputs and outputs may be used in combination with other NGC-40 modules to provide flexible measurement, control, and alarming configurations. The NGC-40-IO Module provides temperature sensor inputs for the NGC-40-HTC and NGC-40-HTC3 modules.

This section will instruct you how to:

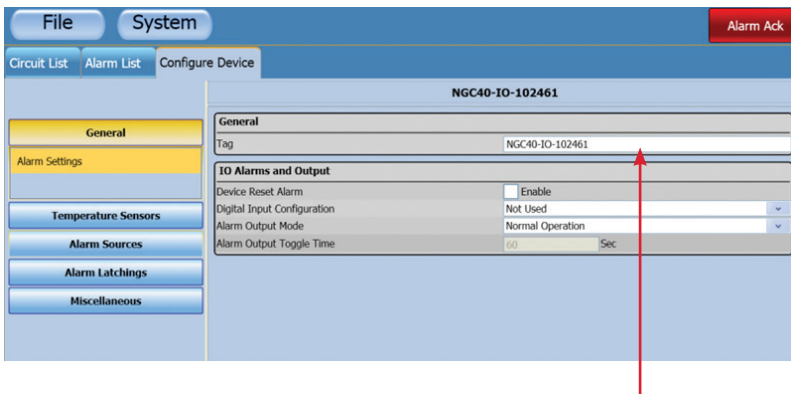
- Configure the NGC-40-IO module as a standalone device for monitoring temperatures.
- How to setup for Hi and LO temperature alarm conditions
- How to configure the Digital Input
- Using the Device Reset to detect when the power has been cycled.
- How to monitor the NGC-40-IO module

6.2 Configuring the NGC-40-IO module

Step 1 – Go to the Device Manager and select Device List and click on the NGC-40-IO module shown in the list. The screen should appear as shown below.



Step 2 – Click on the **Config** button. The screen below should appear.



Step 3 – Under the General section, enter a new tag name.

Step 4 – Device Reset Alarm and Digital Input Alarm

Check the **Device Reset Alarm** box. The NGC-40 demo has a toggle switch for each digital input to simulate the opening and closing of an external switch.

Step 5 – Digital Input Configuration

Click on the **Digital Input Configuration** menu and select **ALARM When Input Is Open**. The NGC-40-IO module will alarm when the external switch is in the OPEN position.

The screenshot shows the configuration interface for the NGC40-IO-102461 module. The left sidebar contains a menu with 'General', 'Alarm Settings', 'Temperature Sensors', 'Alarm Sources', 'Alarm Latchings', and 'Miscellaneous'. The 'General' section is active, showing the 'IO Alarms and Output' settings. A red arrow points to the 'Alarm When Input Is Open' option in the 'Alarm Output Mode' dropdown menu.

NGC40-IO-102461	
General	
Tag	NGC40-IO-102461
IO Alarms and Output	
Device Reset Alarm	<input type="checkbox"/> Enable
Digital Input Configuration	Not Used
Alarm Output Mode	Not Used
Alarm Output Toggle Time	Alarm When Input Is Closed
	Alarm When Input Is Open

Step 6 – Temperature Sensor Settings

Click on the **Temperature Sensor** menu item located on the left hand side of the screen. The screen below should appear. This screen will allow you to set your High and Low temperature alarms for Sensors 1 -4. Under RTD type you can select other types of sensors, such as: (use 3 wire 100 Ohm Platinum).

Step 7 – Enable the High Alarm

Check the High Alarm box. Clicking anywhere within the white box under Setpoint will open the keypad and allow you to enter the new value.

The screenshot shows the configuration interface for the NGC40-IO-102461 module, specifically the 'Temperature Sensor 1' settings. The left sidebar contains a menu with 'General', 'Temperature Sensors', 'Alarm Sources', 'Alarm Latchings', and 'Miscellaneous'. The 'Temperature Sensors' section is active, showing the 'Temperature Sensor 1 - 4' settings. The 'RTD Type' is set to '3 Wire 100 Ohm Platinum'. The 'RTD Tag' is 'NGC40-IO-RTD1-102461'. The 'High Alarm' is enabled with a setpoint of 100 °C. The 'Low Alarm' is enabled with a setpoint of 5 °C. The 'Failure Alarm' is enabled.

NGC40-IO-102461																	
Temperature Sensor 1																	
RTD Type	3 Wire 100 Ohm Platinum																
RTD Lead Resistance	0.0																
RTD Tag	NGC40-IO-RTD1-102461																
<table border="1"><thead><tr><th>Name</th><th>Alarm</th><th>Setpoint</th><th>Filter</th></tr></thead><tbody><tr><td>High Alarm</td><td><input type="checkbox"/> Enable</td><td>100 °C</td><td>0 S</td></tr><tr><td>Low Alarm</td><td><input checked="" type="checkbox"/> Enable</td><td>5 °C</td><td>0 S</td></tr><tr><td>Failure Alarm</td><td><input checked="" type="checkbox"/> Enable</td><td></td><td></td></tr></tbody></table>		Name	Alarm	Setpoint	Filter	High Alarm	<input type="checkbox"/> Enable	100 °C	0 S	Low Alarm	<input checked="" type="checkbox"/> Enable	5 °C	0 S	Failure Alarm	<input checked="" type="checkbox"/> Enable		
Name	Alarm	Setpoint	Filter														
High Alarm	<input type="checkbox"/> Enable	100 °C	0 S														
Low Alarm	<input checked="" type="checkbox"/> Enable	5 °C	0 S														
Failure Alarm	<input checked="" type="checkbox"/> Enable																

Step 8 – Enter the High and Low Alarm values;

- Sensor 1 – High Alarm 115°C, Low Alarm 70°C.
- Sensor 2-4, High Alarm 100°C and Low Alarm 60°C.
- All Filter set to zero.

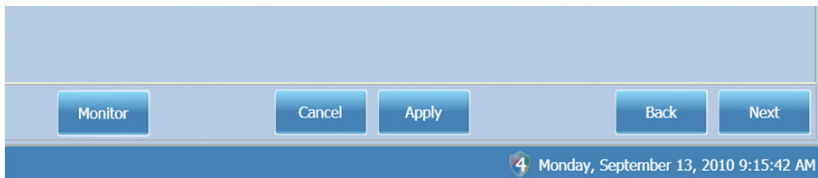
Step 9 – Saving your setup

Click on the **Apply** button to save these changes.

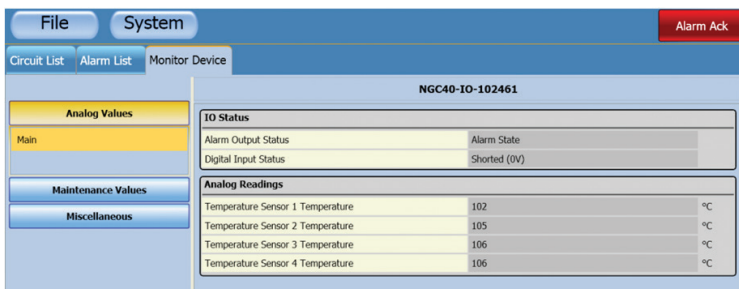
All the parameters for the NGC-40-IO module used in this demo are now entered.

6.3 Monitoring the NGC-40-IO module

Step 1 – Click on the **Monitor** button shown on the lower part of the screen.



The screen shown below should appear. This screen will allow you to view all four sensors and the status of the alarm output and Digital Input.



Step 2 – Change to setting TS1 – TS4 Temperatures on NGC-40-IO module

- Set TS1 rotary switch to 79°C
- Set TS2 – TS4 toggle switches to 79°C

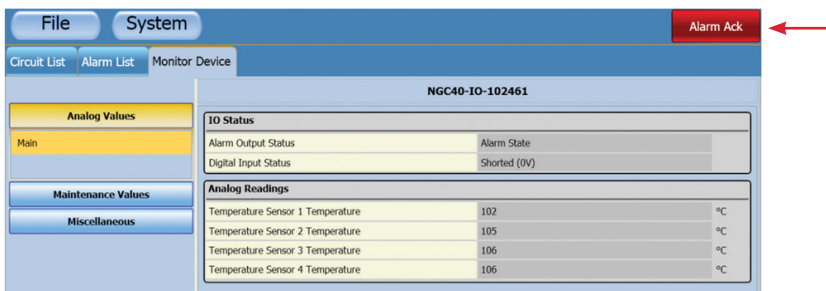
Step 3 – Setting Digital Input Switch on NGC-40-IO module

- Set the toggle switch to the CLOSE position

 **IMPORTANT:** Observe that the temperature values and digital status have changed to the above settings

Step 4 – Creating a TS1 alarm

- Set TS1 rotary switch on the demo from 79°C to 105°C.
- Set TS1 to 131°C, after several seconds an alarm should occur. Notice that the ALARM message in the upper right hand corner of the screen and the Alarm Output Status has changed to Alarm State. Also, the TS1 LED and the "Alarm RLY" LED on the NGC-40-IO module should be red, indicating an alarm condition has occurred.

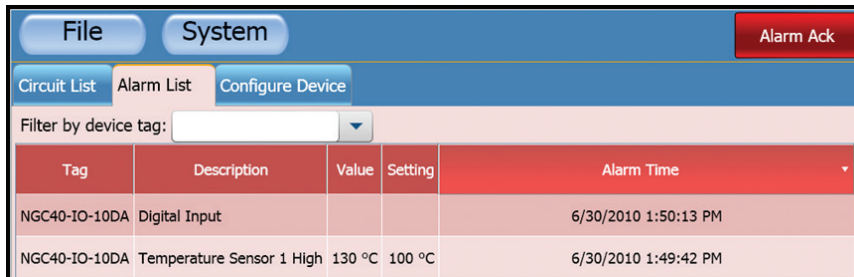


Step 5 – Creating a Digital Input Alarm

- Toggle the Digital Input switch on the NGC-40 demo panel to the OPEN position. The Input LED on the NGC-40-IO module will change from green to red and the Alarm LED turn ON (red).

Step 6 – Viewing the Alarm List

Click on the Alarm List tab to review the alarms. The following screen should appear.




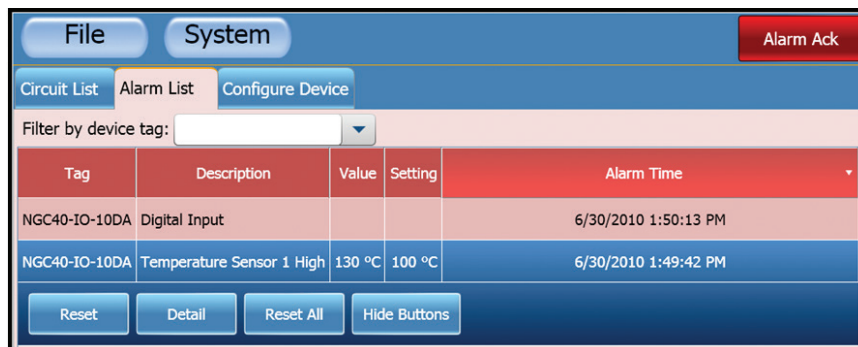
The screenshot shows the 'Alarm List' tab selected. At the top, there are tabs for 'File', 'System', and 'Alarm Ack'. Below these are sub-tabs for 'Circuit List', 'Alarm List', and 'Configure Device'. A 'Filter by device tag:' dropdown is present. The main table lists two alarms:

Tag	Description	Value	Setting	Alarm Time
NGC40-IO-10DA	Digital Input			6/30/2010 1:50:13 PM
NGC40-IO-10DA	Temperature Sensor 1 High	130 °C	100 °C	6/30/2010 1:49:42 PM

Step 6 – Resetting the Alarms using the Reset buttons

- Click anywhere on the alarm message. The below screen will appear showing the reset options.
- Click on the Reset All button to clear both alarms.

 **IMPORTANT:** The alarms are still active therefore they will reappear on the alarm list until the faults are within alarm parameters.




This screenshot is similar to the previous one but includes a row of buttons at the bottom: 'Reset', 'Detail', 'Reset All', and 'Hide Buttons'.

Tag	Description	Value	Setting	Alarm Time
NGC40-IO-10DA	Digital Input			6/30/2010 1:50:13 PM
NGC40-IO-10DA	Temperature Sensor 1 High	130 °C	100 °C	6/30/2010 1:49:42 PM

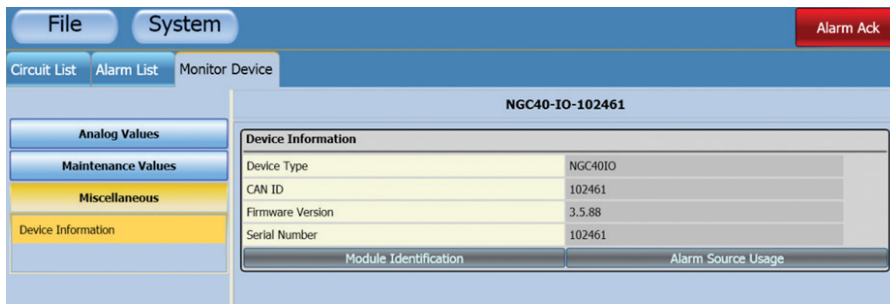
Step 7 – Resetting the alarms after faults cleared

- Wait until the alarms reappear.
- Turn TS1 switch on the demo back to 79°C.
- Toggle the Digital Input switch back to the Close position.

 **IMPORTANT:** The alarms clear automatically since they are not programmed as latching alarm.

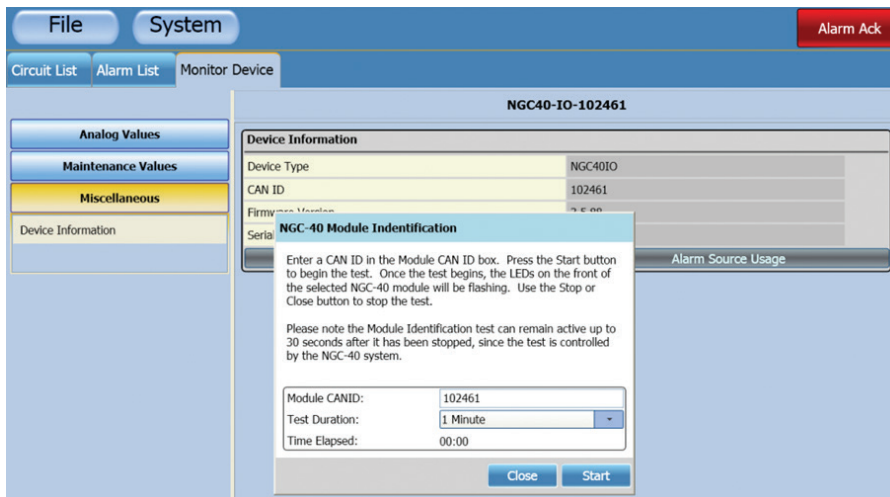
Step 8 – Module Identification

- Go to the Monitor screen by clicking on the Monitor Device button. Click on the Miscellaneous button. The below screen should appear.
- This screen will provide you with CANID, firmware version and serial number of the module. The information may be useful when talking to the factory. Your factory representative may ask for this information.



Step 9 – Module Identification

- Click on the Module Identification button while observing the modules in the demo unit. A message will appear when you click on the Module Identification button. You have several options.
- Click on the Start button and observe the LEDs on the IO. After one minute, the IO module will restart communicating with the NGC-40-HTC and NGC-40-HTC3 modules. This can be observed by the LEDs blinking on each module. Click on the Cancel button to exit this function.



SECTION - 7 NGC-40-SLIM MODULE, CONFIGURING AND MONITORING

NGC-40-SLIM are to be used in areas where compliance to ATEX is mandatory in case of:

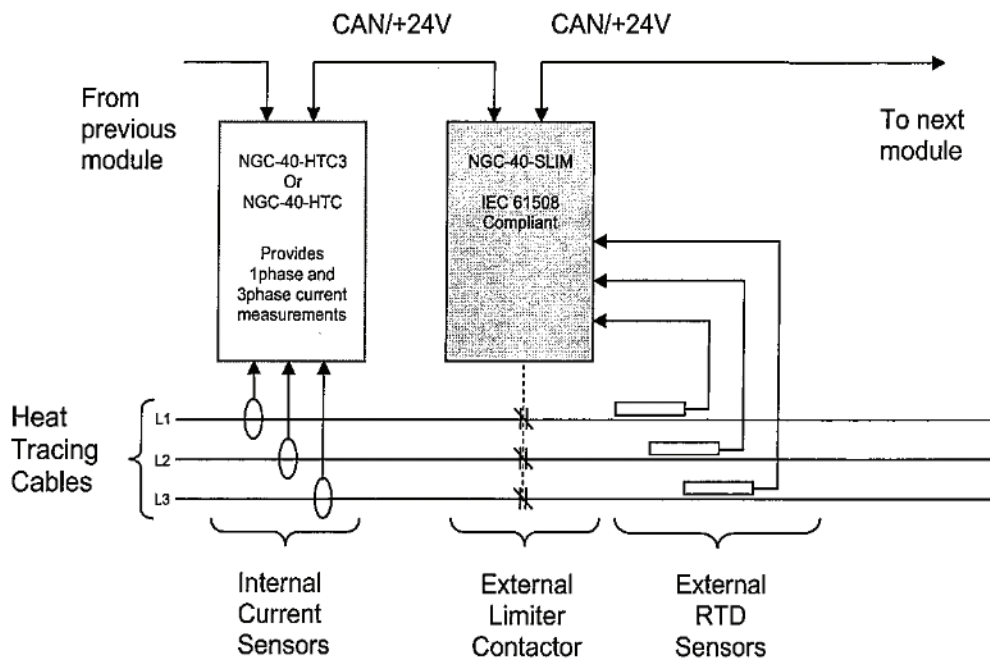
- Applications in Zone 1 where the sheath temperature limitations set forth by the T-class can only be met by means of a control limited design.
- Control limited designs in Zone 2 without the possibility to provide a fail-safe alarm annunciation to a permanently monitored area

A NGC-40-SLIM is highly recommended in case of design parameters that could lead to an overheating of the equipment upon control sensor failure (e.g. heat-up)

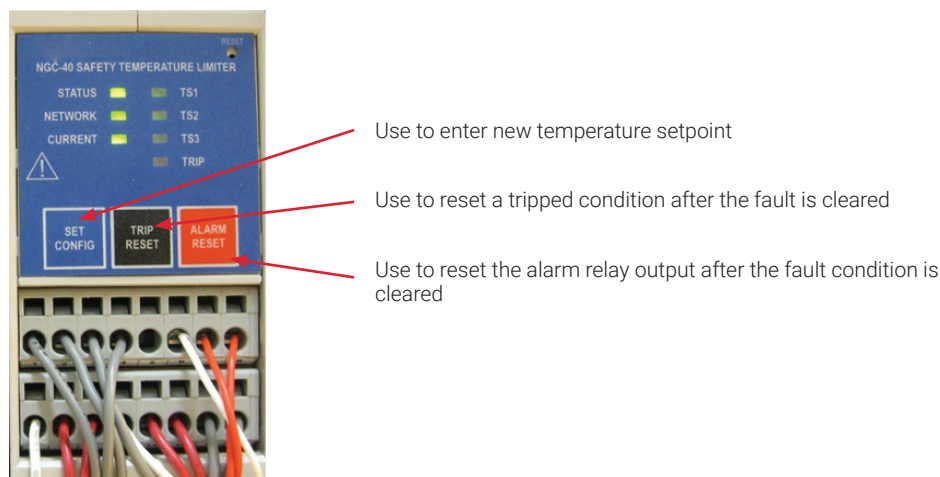
7.1 Demo Mode Configuration Process

The NGC-40-SLIM modules use temperature data to control an external contactor providing protection against over-temperature of heating cables. If the measured temperature exceeds the user defined trip setting then the SLIM will open its output relay. If the output is switched OFF the external contactor isolates the heating cable from the main supply. The unit will remain tripped until it is been manually reset. Resetting the unit will only be possible after the normal operating conditions have been returned to a safe level. The illustration below shows the electrical connection between a NGC-40-HTC or HTC3 and a NGC-40-SLIM.

The NGC-40-SLIM module has three temperature sensor inputs, one form C alarm output, one normally closed relay output used to control an external contactor and a external switch input use to reset the a tripped SLIM.



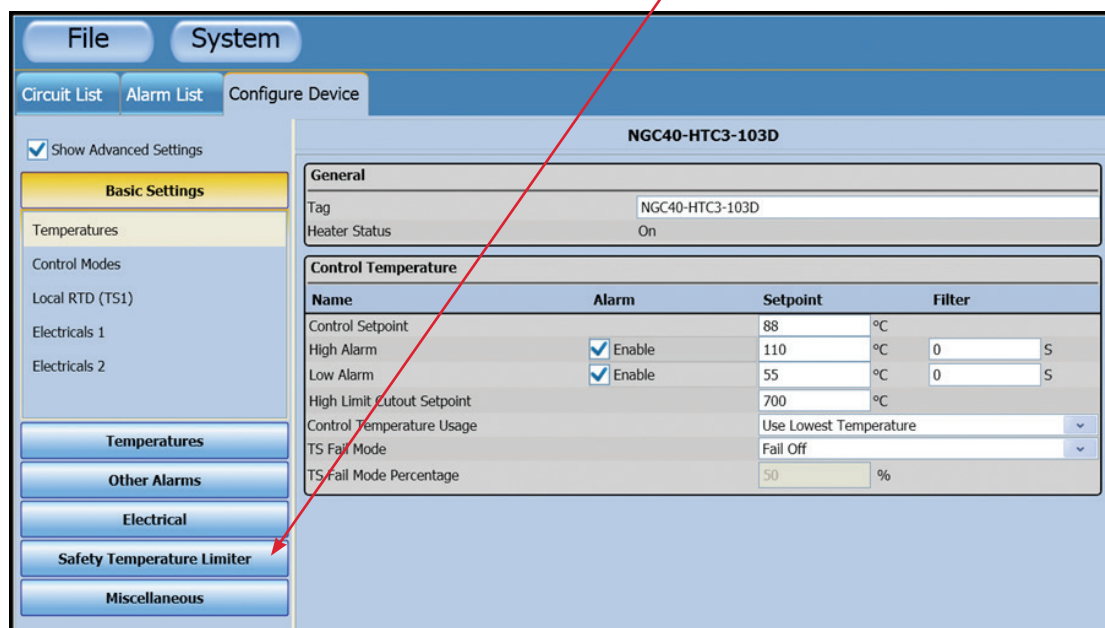
This demo will configure NGC-40-SLIM with the NGC-40-HTC3. The NGC-40 DEMO has been pre-wired to the relay output of the NGC-40-HTC3 module.



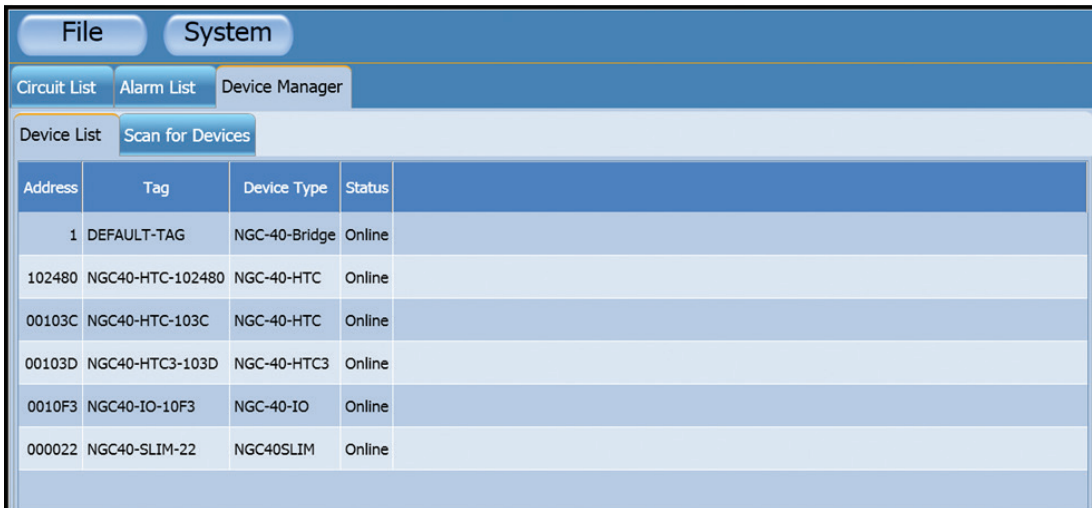
7.2 Configuring the NGC-40-SLIM module

IMPORTANT: The NGC-40-HTC3 module must be configured before beginning the testing of the NGC-40-SLIM. This includes the temperature setpoint, High and Low temperature alarms.

TS1 of the NGC-40-SLIM is configured at the HTC/HTC3 module. TS2 and TS3 must be enabled at the NGC-40-SLIM screen. If a NGC-40-SLIM is detected on the CANbus then a setup button (**Safety Temperature Limiter**) will appear on the left hand side of the screen as shown below. For DEMO purposes the NGC-40-HTC3 will be used with the NGC-40-SLIM. The NGC-40-HTC3 relay output and the NGC-40-SLIM relay output is physically tied within the demo.



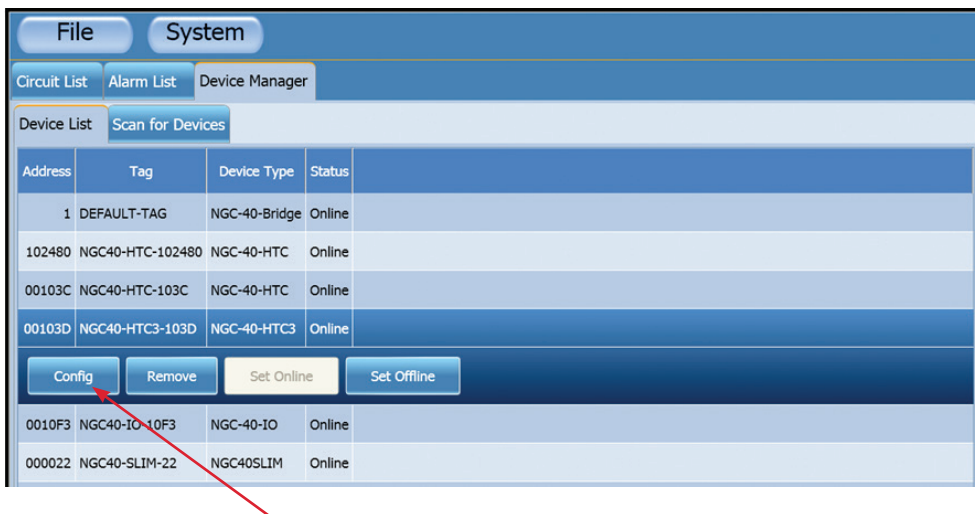
Step 1 – Click on the **SYSTEM** button then select **Device Manager**. The **Device List** will appear. Click on the NGC-40-HTC3 module shown in the list. The NGC-40-HTC3 can also be selected from the Circuit List. IF the NGC-40-HTC3 is picked from the Circuit List then the Overview screen will appear. From the Overview screen select CONFIG.



The screenshot shows the 'Device Manager' tab selected. Below it, the 'Device List' tab is active, displaying a table of devices. The table has columns for Address, Tag, Device Type, and Status. The data is as follows:

Address	Tag	Device Type	Status
1	DEFAULT-TAG	NGC-40-Bridge	Online
102480	NGC40-HTC-102480	NGC-40-HTC	Online
00103C	NGC40-HTC-103C	NGC-40-HTC	Online
00103D	NGC40-HTC3-103D	NGC-40-HTC3	Online
0010F3	NGC40-IO-10F3	NGC-40-IO	Online
000022	NGC40-SLIM-22	NGC40SLIM	Online

Step 2 – Clicking on the NGC-40-HTC3 will drop down the buttons for **configuring, removing and setting the program Online or Offline** as shown.



The screenshot shows the 'Device Manager' tab selected. Below it, the 'Device List' tab is active, displaying a table of devices. The table has columns for Address, Tag, Device Type, and Status. The data is as follows:

Address	Tag	Device Type	Status
1	DEFAULT-TAG	NGC-40-Bridge	Online
102480	NGC40-HTC-102480	NGC-40-HTC	Online
00103C	NGC40-HTC-103C	NGC-40-HTC	Online
00103D	NGC40-HTC3-103D	NGC-40-HTC3	Online
0010F3	NGC40-IO-10F3	NGC-40-IO	Online
000022	NGC40-SLIM-22	NGC40SLIM	Online

Below the table, a row of buttons is visible: Config, Remove, Set Online, and Set Offline. A red arrow points to the 'Config' button.

Step 3 – Click on the **Config Button**, the screen below will appear.

Step 4 – NGC-40-HTC3 General Setup

Setup the NGC-40-HTC3 setpoint and alarm conditions as shown on the screen in **Step 3**. The Local RTD will be your controlling sensor.

Step 5 – NGC-40-SLIM General / Control

Click on the **Safety Limiter Temperature** button. The screen below will appear.

The screenshot shows the 'Configure Device' window for 'NGC40-HTC3-103D'. The left sidebar has 'Safety Temperature Limiter' selected. The main area shows the 'Safety Temperature Limiter Assignment' section with a dropdown menu currently set to '0000 (None)'. Below this is the 'Safety Temperature Limiter Settings' section, which is currently empty with the message 'A Limiter is not assigned to this controller.' At the bottom, there are buttons for 'Monitor', 'Cancel', 'Apply', 'Back', and 'Next'. A red arrow points to the dropdown arrow of the 'Safety Temperature Limiter CAN ID'.

Click on the **Safety Temperature Limiter CAN ID** down arrow. The list will show all the NGC-40-SLIM modules connected on the CANbus. In this demo there is only one NGC-40-SLIM module.

Select the NGC-40-SLIM module from the list. This is the module that is hardwired in the NGC-40 Demo to be use with the NGC-40-SLIM.

The screen below will appear.

The screenshot shows the 'Configure Device' window for 'NGC40-HTC3-103D' after selecting the module. The 'Safety Temperature Limiter Assignment' dropdown is now set to '22 [NGC40-SLIM-22]'. The 'Safety Temperature Limiter Settings' section is populated with details for the selected module: Tag (NGC40-SLIM-22), Firmware Version (3.5.43), Serial Number (22), Controller CANID (103D), and Limiter Trip Setpoint (310 °C). The 'Safety Temperature Limiter Alarms' section shows 'Limiter Tripped Alarm' and 'Limiter Communication Failure Alarm' both enabled. Buttons for 'Monitor', 'Cancel', 'Apply', 'Back', and 'Next' are at the bottom.

Set the **Limiter Trip Setpoint** to 310°C

The screenshot displays the configuration interface for the NGC40-HTC3-103D device. The main menu on the left includes 'File', 'System', 'Circuit List', 'Alarm List', and 'Configure Device'. The 'System' menu is active, showing options like 'Basic Settings', 'Temperatures', 'Other Alarms', 'Electrical', 'Safety Temperature Limiter', and 'Miscellaneous'. The 'Safety Temperature Limiter' option is selected, leading to the 'Safety Temperature Limiter Assignment' and 'Safety Temperature Limiter Settings' sections. A dialog box titled 'Safety Temperature Limiter Trip Setpoint Update' is open, indicating a change in the setpoint from 275 °C to 310 °C. The dialog also shows the time remaining for the operation (58 seconds) and a progress bar. A red arrow points from the top of the screen to the 'Cancel' button in the dialog box.

File **System** **Alarm Ack**

Circuit List **Alarm List** **Configure Device**

☒ Show Advanced Settings

Basic Settings
Temperatures
Other Alarms
Electrical
Safety Temperature Limiter
 Miscellaneous

Safety Temperature Limiter

Safety Temperature Limiter

NGC40-HTC3-103D


Safety Temperature Limiter Assignment

Safety Temperature Limiter CAN ID: 22 [NGC40-SLIM-22]

Safety Temperature Limiter Settings

Tag:
 Firmware:
 Serial Number:
 Controller:
 Limiter Type:


Safety Temperature Limiter Trip Setpoint Update

 You have changed the Safety Temperature Limiter Trip Setpoint.

To Continue with the update, press and hold the Limiter Set Button on the front of the NGC40-Limiter module for at least 3 seconds, or until this screen disappears.

New Safety Temperature Limiter Trip Setpoint: 310 °C
 Old Safety Temperature Limiter Trip Setpoint: 275 °C

Time Remaining before this operation is stopped: 58 seconds



Cancel

Monitor **Cancel** **Apply** **Back** **Next**

v1.0.44 Ready 4 Monday, November 15, 2010 10:44:10 AM

To configure TS2, TS3 and alarms go to the NGC-40-SLIM Config screen by clicking on **SYSTEM | Device Manager | NGC-40-SLIM**. Click on the **Config** button.

File

System

Alarm Ack

Circuit List

Alarm List

Device Manager

Device List

Scan for Devices

Address	Tag	Device Type	Status
1	DEFAULT-TAG	NGC-40-Bridge	Online
102480	NGC40-HTC-102480	NGC-40-HTC	Online
00103C	NGC40-HTC-103C	NGC-40-HTC	Online
00103D	NGC40-HTC3-103D	NGC-40-HTC3	Online
0010F3	NGC40-IO-10F3	NGC-40-IO	Online
000022	NGC40-SLIM-22	NGC40SLIM	Online

Config

Remove

Set Online

Set Offline

The screenshot shows the 'Configure Device' screen for the NGC40-SLIM-22 unit. The left sidebar has tabs for 'General', 'Alarms', 'Temperature Sensors', and 'Miscellaneous'. The 'General' tab is selected. The main area displays the following information:

General	
Tag	NGC40-SLIM-22
Safety Temperature Limiter Trip Setpoint	310 °C

Controller Information	
Tag	NGC40-HTC3-103D
Device Type	NGC40HTC3
CAN Network ID	103D
Firmware Version	3.5.5
Serial Number	22

To configure alarms click on the Alarm button. The screen below will appear.

The screenshot shows the 'Configure Device' screen for the NGC40-SLIM-22 unit, with the 'Alarms' tab selected in the sidebar. The main area displays the following information:

Alarm Output	
Alarm Relay Sense	Normally Closed
Alarm Output Mode	Normal Operation
Alarm Output Toggle Time	60 S
Broadcast Timeout	1 Min

Alarm Settings	
Temperature Sensor 1 Failure Alarm	<input checked="" type="checkbox"/> Enable
Temperature Sensor 2 Failure Alarm	<input checked="" type="checkbox"/> Enable
Temperature Sensor 3 Failure Alarm	<input checked="" type="checkbox"/> Enable
Limiter Reset Alarm	<input type="checkbox"/> Enable
Limiter Tripped Alarm	<input checked="" type="checkbox"/> Enable
HTC Communication Failure Alarm	<input checked="" type="checkbox"/> Enable

To configure TS2 and TS3 click on the Temperature Sensors button. The screen below will appear.

Temperature Sensor 1 Setup is grayed out since this sensor was configured at the NGC-40-HTC3. The demo used TS2 and TS3. This screen will allow the additional sensors to be included.

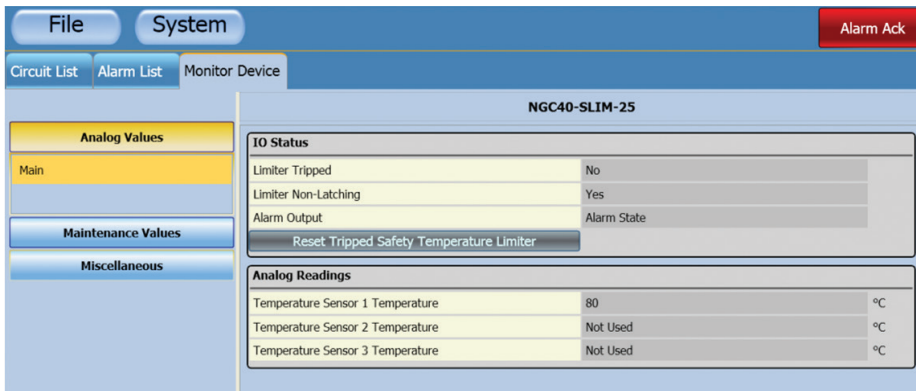
The screenshot shows the 'Configure Device' screen for the NGC40-SLIM-22 unit, with the 'Temperature Sensors' tab selected in the sidebar. The main area displays the following information:

Temperature Sensor Settings	
Temperature Sensor 1 Tag	NGC40-SLIM-RTD1-22
Temperature Sensor 2 Tag	NGC40-SLIM-RTD2-22
Temperature Sensor 3 Tag	NGC40-SLIM-RTD3-22

Temperature Usage Settings	
Temperature Sensor 1 Setup	<input type="checkbox"/> Installed
Temperature Sensor 2 Setup	<input checked="" type="checkbox"/> Installed
Temperature Sensor 3 Setup	<input checked="" type="checkbox"/> Installed

7.3 Monitoring the NGC-40-SLIM module

Step 1 – Click on the Monitor button located at the bottom of the screen. The screen below will be shown. This screen shows the status of the Limiter output and alarm relay output. Also shown on this screen are the analog readings for all three temperature sensors.



Step 2 – Setting the NGC-40 Demo Controls

Set the controls on the NGC-40 Demo as shown below.



Step 3 – If the NGC-40-SLIM and NGC-40-HTC3 are already in alarm then follow these instructions to clear the alarm otherwise go to step 4.

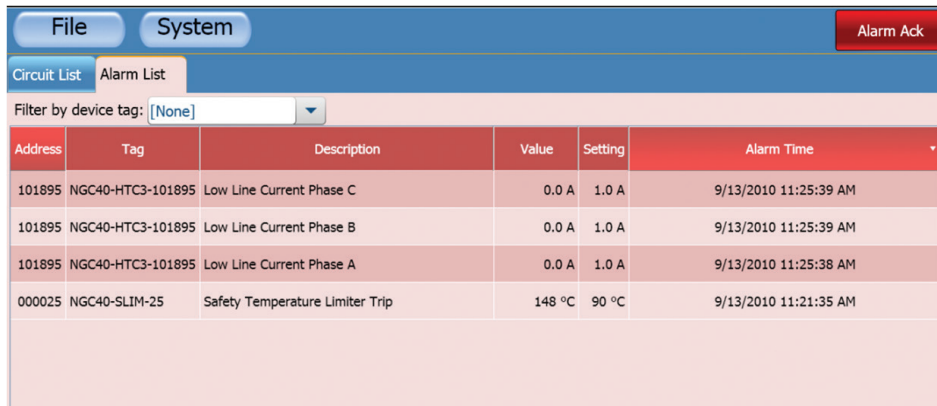
- If the NGC-40-SLIM module was already tripped then reset the module by pressing the **Trip Reset** button on the module followed by the **Alarm Reset** button. The NGC-40-HTC3 might also be in alarm. Clear the NGC-40-HTC3 alarm by pressing the **Alarm Reset** button on the module.
- The NGC-40-HTC3 should have its output ON. This is indicated by the green LED (Output Relay). The SLIM Output Relay LED should also be ON. If the NGC-40-HTC3 output is OFF then rotate TS1 until the output turns ON.

Step 4 – Creating SLIM alarm

- Slowly rotate TS1 (NGC-40- SLIM) on the NGC-40-DEMO clockwise until both outputs turn OFF.
- Rotate TS1 back to its original position, some value less than the trip value.

Step 5 – Clearing the Alarm

- Click on the alarm list to view the alarms. The screen below should appear.
- Clear the Trip alarm by pressing **Trip Reset** button on the SLIM module. Both the NGC-40-HTC3 and NGC-40-SLIM output relays should turn ON.



Address	Tag	Description	Value	Setting	Alarm Time
101895	NGC40-HTC3-101895	Low Line Current Phase C	0.0 A	1.0 A	9/13/2010 11:25:39 AM
101895	NGC40-HTC3-101895	Low Line Current Phase B	0.0 A	1.0 A	9/13/2010 11:25:39 AM
101895	NGC40-HTC3-101895	Low Line Current Phase A	0.0 A	1.0 A	9/13/2010 11:25:38 AM
000025	NGC40-SLIM-25	Safety Temperature Limiter Trip	148 °C	90 °C	9/13/2010 11:21:35 AM

Step 6 – Clearing the SLIM alarm using the Safety Limiter button

Create another trip but this time clear the alarm by pressing the Safety Limiter Reset button on the NGC-40 DEMO. Rotate TS1 to a value less than the trip temperature before pressing the reset switch.

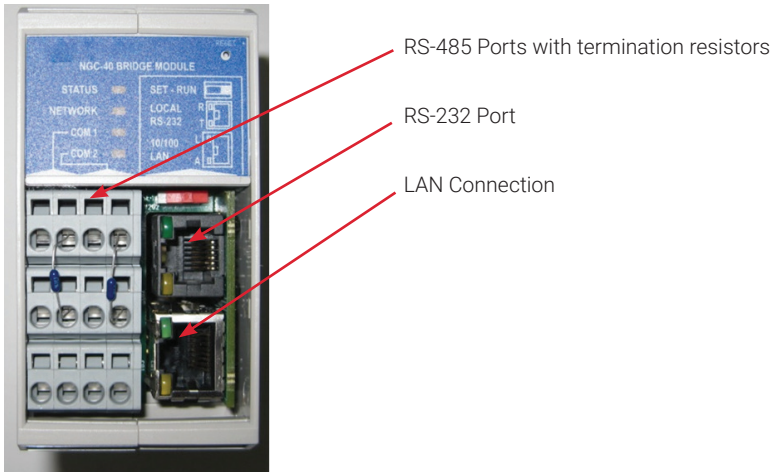
Review – What you accomplished

- How to enter in a new temperature trip value.
- How to configure the alarm output relay for Normal, Toggle or Flash mode.
- How to create a trip condition using the NGC-40-SLIM reset buttons on the module or by using an external push button switch.
- How to clear alarms from the Alarm List generated by the TOUCH 1500 software.

Introduction

The NGC-40 system is made up of six different modules, NGC-40-BRIDGE, NGC-40-HTC, NGC-40-HTC3, NGC-40-IO, NGC-40-PTM and NGC-40-SLIM (Safety Limiter module that is required in European countries). **Table 1** lists the modules and H# for the installation instructions. Refer to these instructions for more detail regarding the individual module.

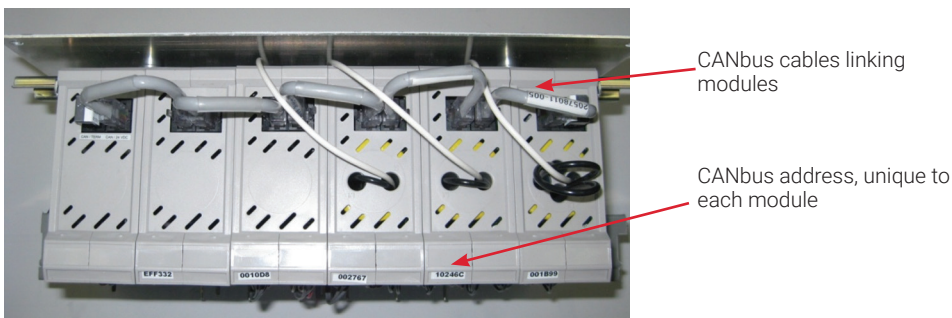
NGC-40-BRIDGE Module



The NGC-40-BRIDGE module is the interface to the outside world allowing the NGC-40 system to communicate with TOUCH 1500 software. The NGC-40-BRIDGE module has several communication ports, RS-232, RS-485 and Ethernet. The NGC-40-BRIDGE also is the module that gathers all of the information from the NGC-40-HTC/NGC-40-HTC3 and NGC-40-IO. The method of communication between the NGC-40-HTC/HTC3 and NGC-40-IO is a protocol called Controller–area network (CAN or CANbus).

CANbus:

- Was designed to allow microcontrollers and devices to communicate with each other within a system without a host computer.
- Is a message based protocol, designed specifically for automotive applications but now also used in other areas such as industrial automation and medical equipments.
- Is used in the NGC-40 system to link the modules so that each module can communicate with any module in the system.



NGC-40-HTC/HTC3 Module

The NGC-40-HTC uses temperature data to control an external contactor or solid-state power relay(s). The temperature information may come from a local RTD hard-wired to the NGC-40-HTC input or from one or more I/O modules in the panel via the CANbus. Along with its control features, the NGC-40-HTC also monitors load current(s) and ground fault (leakage) current.

Two versions of the module are available, the standard version (NGC-40-HTC) will monitor for GF and one load current; the second version (NGC-40-HTC3) will support GF and up to three phases of load current monitoring. Four load current conductors may be passed through holes integral to the housing, and sense current and GF using internal current transformers (CTs).

The NGC-40-HTC and NGC-40-HTC3 have one multi-purpose dry-contact input that can be configured to alarm when OPEN or CLOSE and one form C output alarm relay.

NGC-40-IO Module

The NGC-40-IO Module provides four temperature sensor inputs, one multi-purpose dry-contact input, and one form-C alarm output relay. These inputs and outputs may be used in combination with other NGC-40 modules to provide flexible measurement, control, and alarming configurations.

NGC-40-PTM Module

The NGC-40-PTM module is used to interface the DC power supply (24 Vdc) to the NGC-40-BRIDGE module. The NGC-40-BRIDGE module then conveys the power to the NGC-40-HTC/HTC3, NGC-40-IO and NGC-40-SLIM through the CANbus cable.

NGC-40-SLIM (used in European countries only)

The NGC-40-SLIM is safety limiter module and provides a high temperature limit. The NGC-40-SLIM uses temperature data to control an external contactor providing protection against over temperature of the heating cable. If the measured temperature exceeds the user defined trip setting the NGC-40-SLIM will open its output relay. If the output is switched OFF the external contactor isolates the heating cable from the main supply. The unit will remain in the tripped state until it's manually reset.

The following table calls out the Installation Instructions for the above modules. The NGC-40-SLIM is not included.

Table 1

Module	Installation Instruction H number
NGC-40-HTC/HTC3	H58087
NGC-40-IO	H58088
NGC-40-BRIDGE	H58089
NGC-40-PTM	H58119

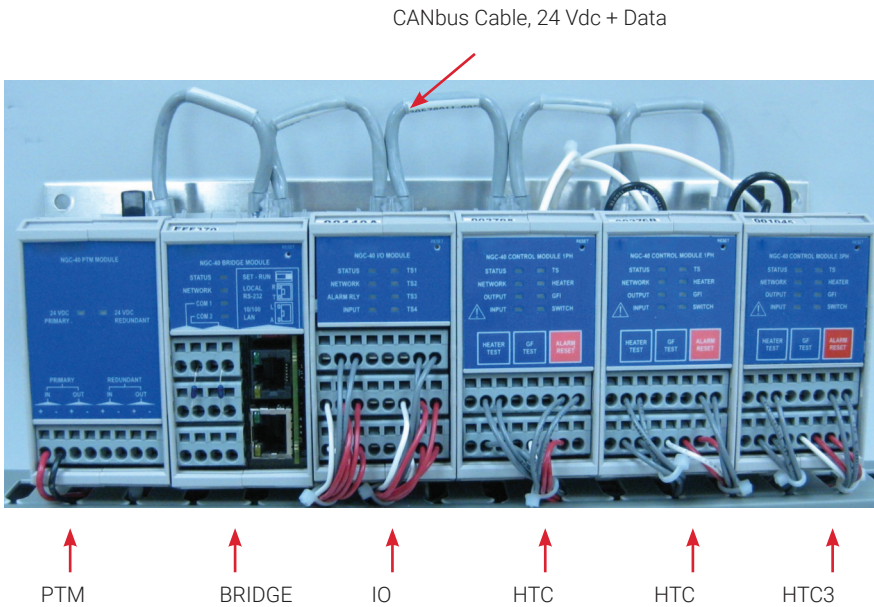
NGC-40 Demo

The NGC-40 demo is made of the following modules listed in Table 2. They are:

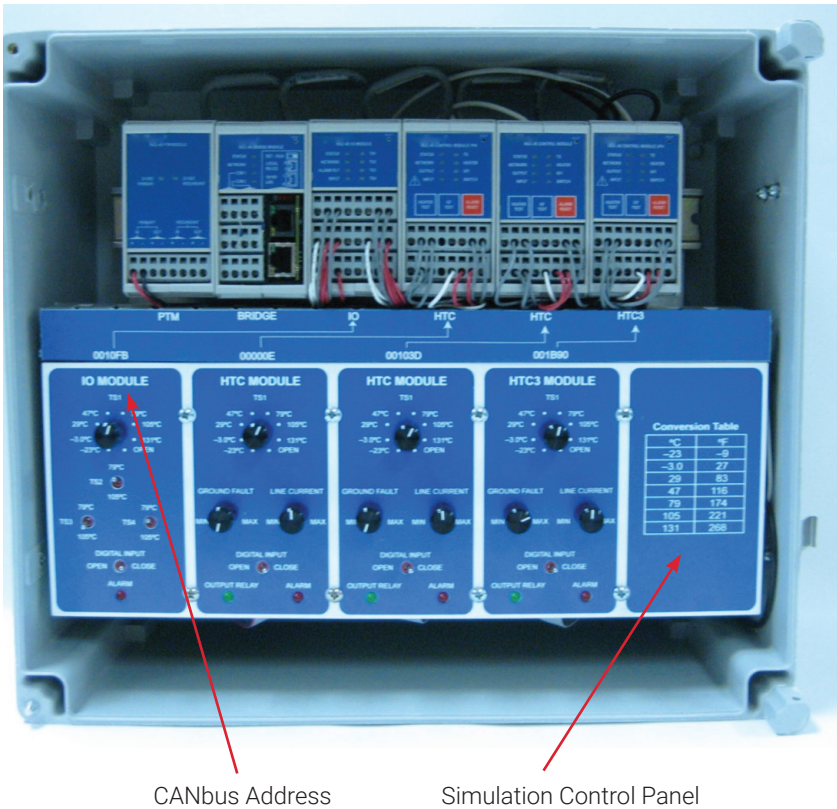
Table 1

Module	Qty
NGC-40-PTM	1
NGC-40-BRIDGE	1
NGC-40-IO	1
NGC-40-HTC	2
NGC-40-HTC3	1
NGC-40-SLIM (European model only)	1

The illustration below shows the NGC-40 modules connected together using the CANbus cable. The CANbus cable carries the data between the modules but also provide the DC voltage to each module.



The illustration below shows the NGC-40 demo without the NGC-40-SLIM module. The simulation control panel is divided into individual groups for setting the temperature, ground fault current, line current and digital input condition. Each section has an LED, RED is for alarm conditions and GREEN is for the status of the output relay on the NGC-40-HTC and NGC-40-HTC3. The NGC-40-SLIM module is not shown but also has a ALARM and OUTPUT LED. Also just above each section of the simulation control panel is a label showing which section is controlling one of the NGC-40 modules.



Temperatures

Each module has a rotary switch to vary the actual temperature (TS1). The rotary switch has eight positions with temperatures ranging from -23°C to 131°C. The each eight position allows an OPEN RTD to illustrate an alarm condition. The NGC-40-IO has an additional three toggle switches to select between 79°C and 105°C.

Ground-Fault Currents

Using the Simulation Control Panel you can vary the amount of ground-fault current applied to the HTCs or HTC3 from 0 mA to 50 mA. The NGC-40 modules will not show ground fault currents below 10 mA. The simulation allows you to simulate a ground-fault alarm and trip condition providing that the output relay on the module is ON.

Line Currents

Using the Simulation Control Panel you can vary the amount of line current applied to the HTCs or HTC3 from 0 to 60 amps. This simulated current allows you to illustrate a HIGH and LOW line current alarms. The NGC-40 demo line current simulation is created by amplifying milliamps to amps. This is accomplished by a special calibration of the NGC-40-HTC and NGC-40-HTC3 module. If you need to replace any modules (NGC-40-HTC or NGC-40-HTC3 only) then please consult the factory. You do not want to remove either of these modules from the demo unit and replace them with off the shelf modules. Once you start the program you will notice that the High and Low current alarms have a filter set for 5 seconds. In an actual startup the TOUCH 1500 software will default these filter times to zero. Do not alter these settings in the demo.

Digital Input

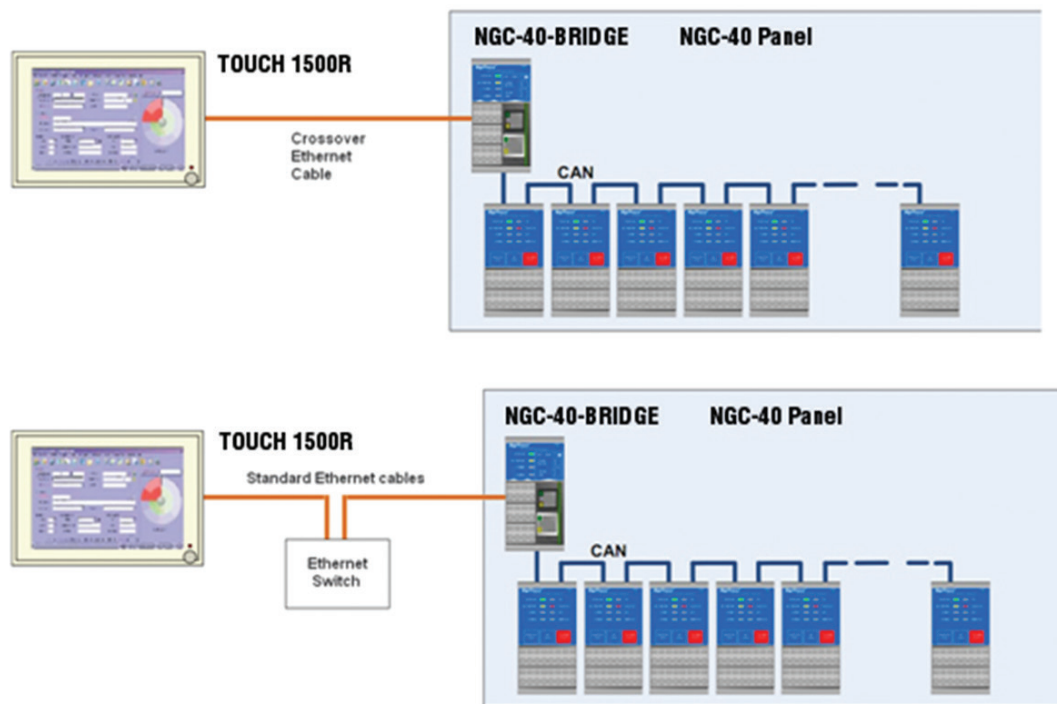
The NGC-40-IO, NGC-40-HTC and NGC-40-HTC3 have a digital input. This input can be connected to an external switching (dry contacts) device for alarming. The TOUCH 1500 software allows you to choose whether you want to alarm on an OPEN or CLOSED condition.

APPENDIX – B ETHERNET CONNECTION TO THE BRIDGE

This appendix will provide two examples on how to connect and program the RAYCHEM TOUCH 1500R and NGC-40-BRIDGE using Ethernet. Before you proceed with the below, a keyboard is required. If a keyboard is not available, a virtual keyboard can be accessed. Go to Start | All Programs | Accessories | Accessibility | On-Screen Keyboard.

Example 1: Connection Directly from the NGC-40-BRIDGE to the TOUCH 1500R using a Static IP Address

Below are two diagrams on how the NGC-40-BRIDGE can connect directly to the TOUCH 1500R:



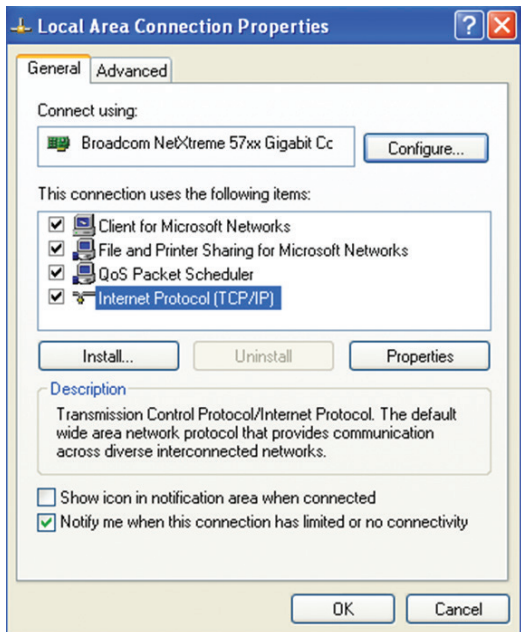
Setting a static IP on the TOUCH 1500R

Step 1: Exit from the TOUCH 1500 software.

The TOUCH 1500 Desktop should now be displayed

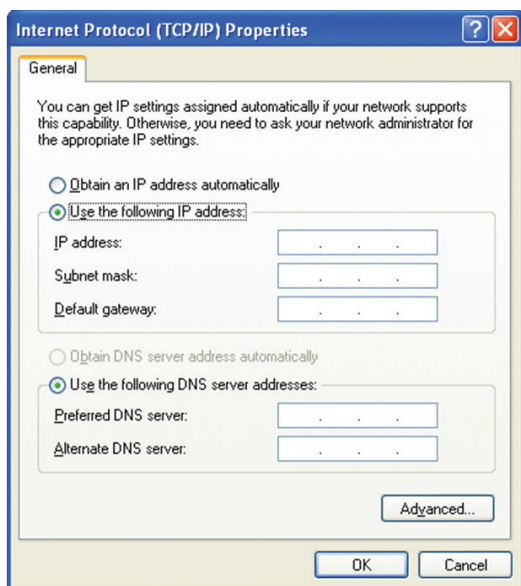
Step 2: Click on Start | Control Panel | Network Connections

Step 3: Double Click on the Local Area Connection or Local Area Connection 2 depending on which Ethernet port is connected to the NGC-40 BRIDGE. You should see the below screen:



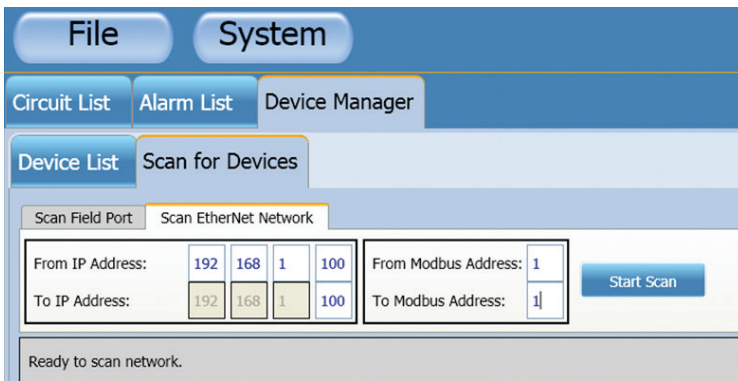
Step 4: Double click on Internet Protocol (TCP/IP)

Step 5: Click on "Use the following IP address" You should see the below screen:



Step 6: Enter the first 3 blocks of the NGC-40-BRIDGE's IP address. The default IP address for the NGC-40-BRIDGE is 192.168.1.100. For the last block, choose a number between 1 and 255, but it cannot be the same address being used by the NGC-40-BRIDGE. IMPORTANT: Once the IP address is entered, the Subnet Mask will automatically be entered. No change is required. Press OK.

Step 8: Enter in the IP address of the Bridge (default IP 192 168 1 100) and change the To Modbus Address to 1.



File System

Circuit List Alarm List Device Manager

Device List Scan for Devices

Scan Field Port Scan Ethernet Network

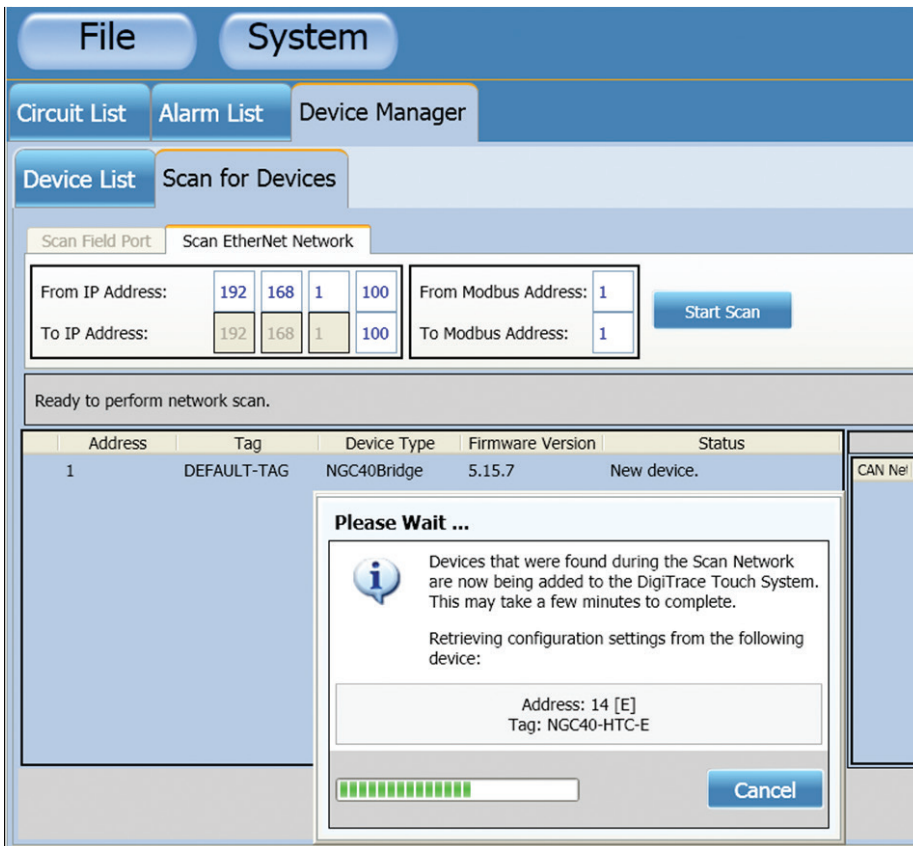
From IP Address: 192 168 1 100 To IP Address: 192 168 1 100

From Modbus Address: 1 To Modbus Address: 1

Start Scan

Ready to scan network.

Step 9: Press the Start Scan button to load the modules.



File System

Circuit List Alarm List Device Manager

Device List Scan for Devices

Scan Field Port Scan Ethernet Network

From IP Address: 192 168 1 100 To IP Address: 192 168 1 100

From Modbus Address: 1 To Modbus Address: 1

Start Scan

Ready to perform network scan.

Address	Tag	Device Type	Firmware Version	Status
1	DEFAULT-TAG	NGC40Bridge	5.15.7	New device.

Please Wait ...

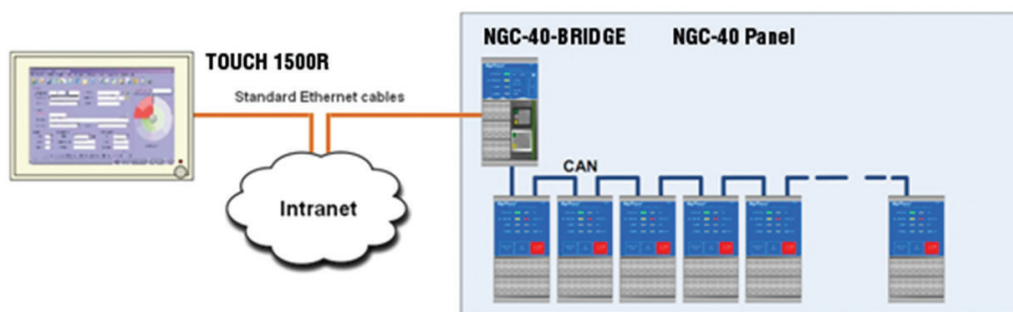
Devices that were found during the Scan Network are now being added to the DigiTrace Touch System. This may take a few minutes to complete.

Retrieving configuration settings from the following device:

Address: 14 [E]
Tag: NGC40-HTC-E

Cancel

Example 2: Connecting NGC-40-BRIDGE and the TOUCH 1500R together via the Internet using DHCP



Below is diagram on how the NGC-40-BRIDGE and the TOUCH 1500R can be connected via the Internet. You may require the assistance from IT to complete the following steps. Before you proceed with the below, a keyboard is required. If a keyboard is not available, a virtual keyboard can be access. Go to Start | All Programs | Accessories | Accessibility | On-Screen Keyboard.

The following only addresses local networks with DHCP. If your network does not have DHCP, you may need to manually setup an IP address in the TOUCH 1500 which is explained in the previous example.

Step 1: Connect the TOUCH 1500R and the NGC-40-BRIDGE to the Internet.

Step 2: Exit the TOUCH 1500R program and go to Start | All Programs | Accessories | Command Prompt

Step 3: Type ipconfig and press enter. Take IMPORTANT of the IP Address and Subnet Mask

```

C:\ Command Prompt
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.
C:\Documents and Settings\dno\te>ipconfig

Windows IP Configuration

Ethernet adapter Local Area Connection:

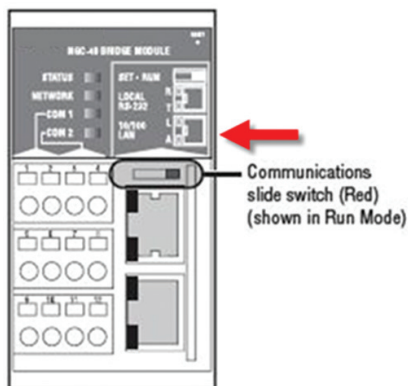
    Connection-specific DNS Suffix  . : CORPDOMAIN.NET
    IP Address. . . . . : 10.133.212.57
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 10.133.212.1

Ethernet adapter Wireless Network Connection:

    Media State . . . . . : Media disconnected
C:\Documents and Settings\dno\te>_
```

Step 4: Using a laptop computer, connect to the NGC-40-BRIDGE via RS-232. Start the RAYCHEM Hardware Manager program and connect to the NGC-40-BRIDGE.

Step 5: Change the NGC-40-BRIDGE from RUN to SET by moving the switch located on the front of the NGC-40-BRIDGE module. This will allow you to edit the NGC-40-BRIDGE settings.



Step 6: Enter the first 3 blocks of the TOUCH 1500R's IP address and Subnet Mask that was assigned by the DHCP server in step 3. For the last block of the IP address, choose a number between 1 and 255, but it cannot be the same as the TOUCH 1500R or any other device on the network. Press OK.

The screenshot shows the 'NGC-40-BRIDGE Settings' window. The 'General Information' section displays the Tag as 'DEFAULT-TAG', Firmware Version as '5.15.7', Operating System Version as '87', Ethernet MAC Address as '00:12:4F:00:02:37', and Number of Installed Devices as '4'. The 'Communication Parameters' section is divided into three columns: 'Com 1', 'Com 2', and 'Local RS-232'. Each column has fields for Modbus Address, Baud Rate, Data Bits, Parity, Stop Bits, TX Delay, and Frame Type. The 'Ethernet Port' section shows the IP Address as '10.133.212.100' and Netmask as '255.255.255.0'. The 'Modbus Timeout' is set to '60' and the 'Modbus Address' is '1'. The 'OK', 'Cancel', and 'Apply' buttons are at the bottom.

Step 7: Change the switch on the NGC-40-BRIDGE from SET to RUN.

Step 8: Start the TOUCH 1500R program and go to the System | Device Manager | Scan for Devices | Scan EtherNet Network. You should see the below screen.

File System

Circuit List Alarm List Device Manager

Device List Scan for Devices

Scan Field Port Scan EtherNet Network

From IP Address: 10 133 220 55 To IP Address: 10 133 220 55

From Modbus Address: 1 To Modbus Address: 247

Start Scan

Ready to scan network.

Step 9: Enter in the IP address of the BRIDGE (step 6) and change the To Modbus Address to 1.

File System

Circuit List Alarm List Device Manager

Device List Scan for Devices

Scan Field Port Scan EtherNet Network

From IP Address: 10 133 212 100 To IP Address: 10 133 212 100

From Modbus Address: 1 To Modbus Address: 1

Start Scan

Ready to scan network.

Address	Tag	Device Type	Firmware Version	Status
---------	-----	-------------	------------------	--------

Step 10: Press the Start Scan button to load the modules.

File System

Circuit List Alarm List Device Manager

Device List Scan for Devices

Scan Field Port Scan EtherNet Network

From IP Address: 10 133 212 100 To IP Address: 10 133 212 100

From Modbus Address: 1 To Modbus Address: 1

Start Scan

Ready to perform network scan.

Address	Tag	Device Type	Firmware Version	Status
1	DEFAULT-TAG	NGC40Bridge	5.15.7	New device.

Please Wait ...

Devices that were found during the Scan Network are now being added to the DigiTrace Touch System. This may take a few minutes to complete.

Retrieving configuration settings from the following device:

Address: 14 [E]
Tag: NGC40-HTC-E

Cancel

North America

Tel +1.800.545.6258
Fax +1.800.527.5703
thermal.info@nvent.com

Europe, Middle East, Africa

Tel +32.16.213.511
Fax +32.16.213.604
thermal.info@nvent.com

Asia Pacific

Tel +86.21.2412.1688
Fax +86.21.5426.3167
cn.thermal.info@nvent.com

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Fax +1.713.868.2333
thermal.info@nvent.com



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